



# National Assessment Program - Civics and Citizenship Technical Report

2013



# **National Assessment Program - Civics and Citizenship 2013 Year 6 and Year 10**

## **TECHNICAL REPORT**

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## CHAPTER 1 INTRODUCTION

### Background

In 1999, the State, Territory and Commonwealth Ministers of Education, meeting as the tenth Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA)<sup>1</sup>, agreed to the National Goals for Schooling in the Twenty-first Century. Subsequently, MCEETYA agreed to report on progress toward the achievement of the National Goals on a nationally-comparable basis, via the National Assessment Program (NAP). As part of NAP, a three-yearly cycle of sample assessments in primary science, civics and citizenship and ICT was established. This report describes the procedures and processes involved in the conduct of the National Assessment Program – Civics and Citizenship (NAP – CC) 2013, the fourth cycle of NAP–CC. The three previous cycles of NAP–CC were conducted in 2004, 2007 and 2010.

### NAP – Civics and Citizenship 2013

As a result of a 2010 Australian federal government initiative and under the direction of SCSEEC<sup>2</sup>, ACARA was tasked with developing and trialling online (Internet-based) delivery of the national sample assessments in science literacy, ICT literacy and civics and citizenship.

The student test and student questionnaire developed for the 2013 NAP–CC were consequently delivered to students online. This is in contrast to the previous three cycles of NAP – CC which were all completed on paper. Given the short timeline for implementing the new assessment mode for the first time for NAP–CC 2013 it was not possible to fully review the impact of the change in assessment mode on student responses. Therefore, comparisons over time for test or questionnaire results should be interpreted with due caution.

As part of the preparation for the third cycle the NAP–CC Assessment Domain was revised and expanded to form the NAP–CC Assessment Framework. This was developed in consultation with the 2010 NAP–CC Review Committee<sup>3</sup>. The assessment framework extended the breadth of the assessment domain in light of two key curriculum reforms:

- the Statements of Learning for Civics and Citizenship (SOL–CC; Curriculum Corporation, 2006); and
- the implicit and explicit values, attitudes, dispositions and behaviours in the Melbourne Declaration on Educational Goals for Young Australians (MCEETYA, 2008).

The fourth cycle was conducted with reference to the NAP–CC Assessment Framework. The assessment framework consists of four discrete aspects which are further organised according to their content. The four aspects are:

- Aspect 1 – civics and citizenship content;
- Aspect 2 – cognitive processes for understanding civics and citizenship;
- Aspect 3 – affective processes for civics and citizenship; and
- Aspect 4 – civics and citizenship participation.

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<sup>1</sup> Subsequently the Ministerial Council on Education, Early Childhood Development and Youth Affairs (MCEECDYA).

<sup>2</sup> On 1 July 2014, the Standing Council on School Education and Early Childhood became the Education Council.

<sup>3</sup> The equivalent advisory body in the 2013 cycle is the NAP – CC Working Group.

Aspects 1 and 2 were assessed through a cognitive test of civics and citizenship. Aspects 3 and 4 were assessed with a student questionnaire. The Australian Curriculum: Civics and Citizenship was in early stages of development when NAP–CC was being created and consequently the NAP–CC Assessment Framework has not yet been revised with reference to it. However, there is a clear alignment between the direction and intention of the Australian Curriculum: Civics and Citizenship and the NAP–CC Assessment Framework.

## Participants

Schools from all states and territories, and from the government, Catholic and independent sectors, participated. Data were gathered from 5,777 Year 6 students from 342 schools and 5,478 Year 10 students from 329 schools.

## Assessment procedures in NAP–CC 2013

### *Delivery methods*

The primary delivery mode had students completing the assessments over the internet. However, the ministerial decision to implement online testing in the NAP sample assessments included the expectation that the delivery of the assessments would not compromise the representativeness of the sample of students completing them. Given that 2013 was the first time the NAP–CC tests had been administered on computer (and using the internet) the tests were administered by trained test administrators rather than by classroom teachers.

As an additional measure, a backup delivery method was available in which the tests were run on USB drives. This backup solution ensured that the tests could be administered in schools where internet delivery was not available on the day of testing. Each test administrator carried a set of USB drives with them to schools so they could implement the USB delivery if required. Student responses could then be uploaded from the USB drives to the central computer at a later date. This backup system was used in a small number of schools (11) and ensured that the integrity of the sample of students completing the assessments.

### *Preparation for test delivery*

In order to ensure that schools were prepared for the online delivery of the student assessments, a series of preparatory measures was implemented. These began roughly three months before the assessments were conducted.

Sampled schools were contacted and asked to complete two preparatory tasks. Firstly they were asked to complete a questionnaire relating to the suitability of the school computer facilities for completion of the online assessment. Critical questions related to the number of co-located internet-enabled computers in the school, their operating systems (i.e. MS Windows or Mac), the type and version of web browser installed and screen resolution on the devices. The full set of questions is presented as Appendix A.1.

On the basis of this first set of questions, it was possible to determine whether it was feasible to expect to conduct the testing using school computers. In the two cases where this was not the case, alternative arrangements were negotiated with the school whereby laptop computers were brought to the school by the Test Administrator and the test was delivered via either USB stick or by connecting these laptops to the school's online network.

All other schools were asked to undertake the second preparatory task, the Technical Readiness Test, or TRT. The TRT involved logging into a website and answering a small number of questions. The readiness test provided immediate feedback to the school of the success or failure of the test. The readiness test also collected data about the type of school resources (such as the operating system and



browser type being used on the computer to access the test). Further details about the TRT are provided in Chapter 4.

ACER staff worked with each school to determine the best way for the test administration to take place, and to prepare for the technical aspects of the test administration on the basis of the outcomes of the readiness questionnaire and test. These arrangements ranged from very little in cases where the facilities were suitable and the computer-based readiness test succeeded, through to alternative delivery in cases where the facilities were unavailable or unable to be configured for use.

## Measuring trends and including new developments in NAP–CC

A key feature of the NAP sample assessments is the inclusion of “link” (common) items across cycles.

Six clusters comprising roughly 13 items each at Year 6 and 14 items each at Year 10 were the same as those used in the 2010 assessment. These clusters were included (along with some additional items in other clusters) to allow for the 2013 results to be reported on the NAP–CC scale established in 2004. However, the transition from the pencil and paper data collection used in all previous cycles of NAP–CC (2004, 2007 and 2010) to computer-based data collection in 2013 led to the question of whether it was feasible to equate the items and student achievement to the same scale. The same question was considered regarding the student questionnaire data, which were collected using the same questions as used in NAP–CC 2010, but on computer in 2013 rather than on paper (as done in 2010).

The questions of whether the student questionnaire data, and the student test data collected in 2013 could and should be equated to the data collected during the previous cycles was brought to the ACARA Measurement Advisory Group in March 2014. The Measurement Advisory Group advised that the equating should be completed and the data reported using the relevant existing NAP–CC metrics for both the questionnaire and test. The group also recommended that any reporting of the data make clear to readers that interpretation of the 2013 data should include consideration of the potential for them to have been influenced, relative to the results in previous cycles, by the change to computer-based delivery.

All test and questionnaire data have therefore been equated to the same measurement scales as reported in 2010, but with the warning to readers that that any comparisons over time for test or questionnaire results should be interpreted with due caution.

## Student questionnaire

The student questionnaire items were developed to focus on Aspects 3 and 4 of the NAP–CC Assessment Framework. The questionnaire used in NAP–CC 2013 comprised the same questions that were used in NAP–CC 2010. The items in 2013 were delivered to students online.

Students’ attitudes towards civic and citizenship issues were assessed with questions covering five constructs:

- importance of conventional citizenship behaviour;
- importance of social movement related citizenship behaviour;
- trust in civic institutions and processes;
- attitudes towards Australian Indigenous culture; and
- attitudes towards Australian diversity (Year 10 students only).

Students’ engagement in civic and citizenship activities was assessed with questions concerning the following areas:

- participation in civics and citizenship related activities at school;

- participation in civics and citizenship related activities in the community (Year 10 students only);
- media use and participation in discussion of political or social issues;
- interest in political or social issues;
- confidence to actively engage in civic action;
- valuing civic action;
- intentions to promote important issues in the future; and
- expectations of future civic engagement (Year 10 students only).

The text of the student questionnaire items can be found in Appendix A.2.

## Delivering the assessments

### *Test delivery and design*

Trained test administrators administered the assessment between 9<sup>th</sup> October and 5<sup>th</sup> November 2013. The assessment was computer based with multiple-choice and open-ended items, followed by the student questionnaire. The same questionnaire was delivered to all students in Year 6 and a slightly expanded questionnaire was delivered to all students in Year 10.

There is too much test content described in the NAP–CC Assessment Framework to include in a single student test. The test items for each year level were therefore allocated to one of nine *clusters* of test items. Nine *test forms* were created at each year level. The term test form refers to a fixed combination of three clusters to be completed by each student delivered using the online system.

The nine clusters were allocated to the nine test forms so that:

- Each cluster appeared once in a test form with each other cluster;
- Each cluster appeared once in each position in a test form (beginning, middle or end); and
- Each cluster appeared in three of the nine test forms.

Each test form consisted of approximately 38 items for Year 6 students and approximately 41 items for Year 10 students.

Students were allowed no more than 60 minutes at Year 6 and 75 minutes at Year 10 to complete the test and approximately 15 minutes for the student questionnaire. The test was timed automatically by online delivery system.

### *The online test interface*

The following navigation features were available to students in the online test-taking environment:

- *Flag Item:* Clicking the Flag item button recorded (for each student’s reference only) that the student may like to return to the item to check their response. Students could flag an item regardless of whether or not they had entered a response to the item at the time. Flagged items were accessible directly through the Summary screen.
- *Summary:* Clicking on the Summary button took the students to a screen that showed summary information of their progress throughout the test. The summary screen provided students with information about how many items they had answered, not answered and which items they had flagged. Students could return to any given item from the summary screen.
- *Item numbers:* The numbers 1 to 4 at the top of Figure 2.1 refer to the four practice items. In the live tests, the numbers listed across the top of the screen corresponded to

the items in the test. Students could navigate directly to any test item by clicking on its corresponding number at the top of the screen.

- *Progress*: The progress bar represented a timer. It showed graphically the proportion of available time for the test that had been used and was still available to the student. If a student needed to pause during the test (take a rest break for example), the test administrator could pause the timer so the student would not be disadvantaged. Students also received an on screen reminder, in addition to the timer, when they had five minutes time remaining on the test.
- *Previous and Next*: Clicking on the Previous and Next buttons allowed students to navigate to the previous or next items in the test. Any student response to an item was saved by the testing system when a student navigated away from the item by any method.
- *Show resource*: Clicking on the Show resource button allowed students to expand the stimulus material shown to the left of the screen.

Sample screenshots of items in the test delivery system have been included as Appendix A.3.

## Student Background

Information about individual and family background characteristics was collected centrally through schools and education systems (see Chapter 4 for more information on the method of collection). The background variables were gender, age, Indigenous status, cultural background (country of birth and main language other than English spoken at home), socio-economic background (parental education and parental occupation) and geographic location. The structure of these variables had been agreed upon by the PMRT as part of NAP and follows the guidelines given in the 2012 Data Standards Manual - Student Background Characteristics (ACARA 2012), referred to as the Data Standards Manual in this report.

## Sample

The National Assessment Program – Civics and Citizenship was administered to students in Year 6 and Year 10 in all states and territories.

Student sampling followed the cluster sampling procedures established for the National Assessment Program Sample Assessments. The sampling was completed using a two-stage process and was applied at each year level.

The first stage of sampling involved selecting a sample of schools within explicit strata formed by state or territory and school sector. Within each explicit stratum, geographic location, a school measure of socio-economic status, and school size were all used for implicit stratification. A school's probability of selection was proportional to the number of students enrolled in the relevant year level (6 or 10). Schools with larger numbers of students at the relevant year level were more likely to be selected for participation.

Schools excluded from the target population included non-mainstream schools (such as schools for students with intellectual disabilities), very remote schools (in all states except the Northern Territory) and in schools with fewer than five students at the target year level. These exclusions accounted for 1.7 per cent of the Year 6 student population and 1.2 per cent of the Year 10 student population.

The second stage comprised the drawing of a random sample of twenty students from the target year level in sampled schools. The school samples were drawn separately for each year level (for more detail see Technical Report). Where fewer than 20 eligible students were enrolled in the target grade (i.e. in small schools), all students were selected to participate.

In previous cycles of NAP–CC one in-tact class was selected in each sampled school. The change to sampling 20 students in each school was prompted by the change to the online delivery mode in NAP–CC 2013 with a view to maximising the likelihood that the NAP–CC assessment could be conducted in a single session with 20 students all using computers at the school (usually in a computer lab).

Eighty-nine per cent of the sampled Year 6 and 84 per cent sampled Year 10 students participated in the assessment. Table 3.1 shows the numbers of schools and students for the achieved sample.

## Reporting of the assessment results

The results of the assessment were reported in the NAP–CC Years 6 and 10 Report 2013.

Mean test scores and distributions of scores were shown at the national level and by state and territory. The test results were also described in terms of achievement against the six proficiency levels described in the NAP–CC scale and against the Proficient Standard for each year level. Achievement by known subgroups (such as by gender and Indigenous or non-Indigenous status) was also reported.

The questionnaire results were reported both in terms of responses to individual items (percentages of students selecting different responses) and, where appropriate, scores on groups of items that formed common scales. Some relevant subgroup comparisons were made for questionnaire data, as were measures of the association between test scores and selected attitudes and behaviours measured by the questionnaire.

## Structure of the Technical Report

This report describes the technical aspects of the NAP–CC sample assessment and summarises the main activities involved in the data collection, the data collection instruments and the analysis and reporting of the data.

Chapter 2 summarises the development of the assessment framework and describes the process of item development and construction of the instruments.

Chapter 3 reviews the sample design and describes the sampling process. It also describes the weighting procedures that were implemented to derive population estimates and the calculation of participation rates.

Chapter 4 summarises the field administration of the assessment. It outlines the data collection procedures implemented for NAP–CC 2013 and provides an overview of the assessment data marking operation and the creation of the subsequent interactive school summary reports.

Chapter 5 deals with management procedures, including quality control and the cleaning and coding of the data.

Chapter 6 describes the scaling model and procedures, item calibration, the creation of plausible values and the standardisation of student scores. It discusses of the procedures used for vertical (Year 6 to Year 10) and horizontal (2010 to 2007 and 2004) equating with procedures for estimating equating errors.

Chapter 7 outlines the proficiency levels and standards.

Chapter 8 discusses the reporting of student results, including the procedures used to estimate sampling and measurement variance and the reporting of statistics for jurisdictions and designated groups of students' comparisons over time.

## CHAPTER 2

# ASSESSMENT FRAMEWORK AND INSTRUMENT DEVELOPMENT

### Introduction

This chapter describes the item development for NAP–CC in 2013. This includes the details of the development of the instruments against the NAP–CC Assessment Framework, details of the equating of items across the NAP–CC assessment cycles, information about the scoring of items and the student questionnaire.

Aspects 1 and 2 of the NAP–CC Assessment Framework provide the content and cognitive processes that were brought together to create the NAP–CC assessment items. The items for the assessment were developed in units. Each unit comprised one or more assessment items that were developed around a single theme or stimulus. In its simplest form, a unit was a single, self-contained item, and, in its most complex form, a piece of stimulus material (text and/or graphic images) with a set of assessment items related to it. Each assessment item was referenced to a single content concept from Aspect 1 and also to a single cognitive process from Aspect 2 of the NAP–CC Assessment Framework, which are outlined in Table 2.1 in this chapter.

Item-response types included multiple-choice, dual-choice (true/false) and constructed response (requiring responses from one word through to a maximum of two to three sentences). The scores allocated to items varied: dual and multiple-choice items had a maximum score of one point for correct responses and zero points for incorrect ones. For constructed response items students could receive between zero and three points. The assessment was conducted using a total of 172 items, with 102 of them being secure items from the 2010 assessment cycle<sup>4</sup>.

### Developing the assessment framework

The contents of the assessment instruments in all NAP–CC cycles have been defined according to the *National Assessment Program – Civics and Citizenship Assessment Domain*.

In 2008, it was decided to revise the assessment domain. The *National Assessment Program – Civics and Citizenship Assessment Framework*, developed in consultation with the 2010 *National Assessment Program – Civics and Citizenship Review Committee*. The assessment framework extends the breadth of the assessment domain in light of two key curriculum reforms:

1. The *Statements of Learning for Civics and Citizenship* (SOL – CC) published in 2006; and
2. The implicit and explicit values, attitudes, dispositions and behaviours in the *Melbourne Declaration on Educational Goals for Young Australians* published in 2008.

The assessment framework was developed during 2009. The development was guided by a working group of the review committee and monitored (including the provision of formal feedback at meetings) by the review committee during 2009.

Development began with a complete mapping of the contents of the assessment domain to the content organisers of the SOL – CC. An audit of the SOL – CC revealed a small set of contents (mainly to do with topics of globalisation and Australia’s place in the Asian region) that were present in the SOL –

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<sup>4</sup> Including some items held secure from 2004 and 2007.

CC but not represented in the assessment domain. These contents were added to the restructured assessment domain. The content aspect (Aspect 1) of the assessment framework was then described by grouping common contents (under the three content headings provided by the SOL – CC) and generating summary descriptions of these as concepts under each of the three content areas. Four concepts were developed under each of the three content areas. The content areas and concepts in the assessment framework are listed in the first part of Table 2.1.

**Table 2.1: Four aspects of the assessment framework and their concepts and processes**

<b>Aspect 1: Content area</b>	<p><b>1.1 Government and law</b></p> <p>1.1.1 Democracy in principle</p> <p>1.1.2 Democracy in practice</p> <p>1.1.3 Rules and laws in principle</p> <p>1.1.4 Rules and laws in practice</p> <p><b>1.2 Citizenship in a democracy</b></p> <p>1.2.1 Rights and responsibilities of citizens in a democracy</p> <p>1.2.2 Civic participation in a democracy</p> <p>1.2.3 Making decisions and problem solving in a democracy</p> <p>1.2.4 Diversity and cohesion in a democracy</p> <p><b>1.3 Historical perspectives</b></p> <p>1.3.1 Governance in Australia before 1788</p> <p>1.3.2 Governance in Australia after 1788</p> <p>1.3.3 Identity and culture in Australia</p> <p>1.3.4 Local, regional and global perspectives and influences on Australian democracy</p>
<b>Aspect 2: Cognitive processes</b>	<p><b>2.1 Knowing</b></p> <p>2.1.1 Define</p> <p>2.1.2 Describe</p> <p>2.1.3 Illustrate with examples</p> <p><b>2.2 Reasoning and analysing</b></p> <p>2.2.1 Interpret information</p> <p>2.2.2 Relate</p> <p>2.2.3 Justify</p> <p>2.2.4 Integrate</p> <p>2.2.5 Generalise</p> <p>2.2.6 Evaluate</p> <p>2.2.7 Solve problems</p> <p>2.2.8 Hypothesise</p> <p>2.2.9 Understand civic motivation</p> <p>2.2.10 Understand civic continuity and change.</p>
<b>Aspect 3: Affective processes</b>	<p><b>3.1 Civic identity and connectedness</b></p> <p>3.1.1 Attitudes towards Australian identity</p> <p>3.1.2 Attitudes to Australian diversity and multiculturalism</p> <p>3.1.3 Attitudes towards Indigenous Australian cultures and traditions</p> <p><b>3.2 Civic efficacy</b></p> <p>3.2.1 Beliefs in the value of civic action</p> <p>3.2.2 Confidence to actively engage</p> <p><b>3.3 Civic beliefs and attitudes</b></p> <p>3.3.1 Interest in civic issues</p> <p>3.3.2 Beliefs in democratic values and value of rights</p> <p>3.3.3 Beliefs in civic responsibility</p> <p>3.3.4 Trust in civic institutions and processes</p>
<b>Aspect 4: Participatory processes</b>	<p><b>4.1 Actual behaviours</b></p> <p>4.1.1 Civic-related participation in the community</p> <p>4.1.2 Civic-related participation at school</p> <p>4.1.3 Participation in civic-related communication</p> <p><b>4.2 Behavioural intentions</b></p> <p>4.2.1 Expected participation in activities to promote important issues</p> <p>4.2.2 Expected active civic engagement in the future</p> <p><b>4.3 Students' skills for participation</b></p> <p>This process relates to students' capacity to work constructively and responsibly with others, to use positive communication skills, to undertake roles, to manage conflict, to solve problems and to make decisions.</p>



The second aspect in the assessment framework was developed to describe the types of knowledge and understanding of the civics and citizenship content that could be tested in the NAP–CC test. The cognitive processes aspect of the assessment framework was developed from the mapping of the *National Assessment Program – Civics and Citizenship Assessment Domain* (which included both contents and cognitive processes) and interrogation of the explicit and implicit demands in the SOL – CC and the Melbourne Declaration. The cognitive processes were developed with reference to those established in the *International Civic and Citizenship Education Study Assessment Framework* (Schulz et. al., 2008).

The cognitive processes described in the assessment framework are listed in the second section of Table 2.1.

The third and fourth aspects of the assessment framework relate to the attitudes, beliefs, dispositions and behaviours that relate to civics and citizenship. They were developed in relation to the implicit and explicit intentions evident in the assessment domain, the SOL – CC and the Melbourne Declaration. The contents of aspects three and four were developed to be assessed using the student questionnaire. At the time of development it was understood that not all the described contents could be included in a single questionnaire. The expectation was that the main assessable elements for each aspect would be included in NAP–CC 2014.

The affective and behavioural processes, described in aspects three and four of the assessment framework, are also listed in Table 2.1.

The assessment framework acknowledges that the measurement of students’ skills for participation is outside the scope of the NAP–CC assessment. The review committee recommended that they nevertheless be included in the assessment framework, with an acknowledgement that they will not be directly assessed in NAP–CC in order to ensure that the profile of these skills in civics and citizenship education is retained.

## Assessment delivery system

The model accepted for the NAP–CC assessment in 2013 involved students completing all parts of the assessment using school computers connected to the internet. This was the first time that the NAP–CC assessment was administered online.

A backup delivery method was also available in which the tests were run on USB drives. This backup solution ensured that the tests could be administered in schools where internet delivery was not available on the day of testing. Each test administrator carried a set of USB drives with them to schools so they could implement the USB delivery as a backup system if required. Student responses could then be uploaded from the USB drives to the central computer at a later date. This backup system was used in a small number of schools (11) and ensured that the integrity of the sample of students completing the assessments.

Test Administrators were trained in the use of the delivery system. A designated contact person at each school was also trained in the delivery system and was present throughout the testing session. Additional on-call Helpdesk assistance was provided by ACER to ensure successful delivery of the test online.

## Item development

The new items for the 2014 assessment were developed by a team of ACER’s expert test developers. The test development team first sourced and developed relevant, engaging and focused civics and citizenship stimulus materials that addressed the assessment framework. Items were developed that addressed the contents of the assessment framework using the civics and citizenship content and



contexts contained in the stimulus materials. The items were constructed in units. A unit consists of one or more assessment items directly relating to a single theme or stimulus. In its simplest form a unit is a single self-contained item, in its most complex form a unit is a piece of stimulus material with a set of assessment items directly related to it.

Developed items were then subjected to panelling. The panelling process consisted of a small group (between three and six) of expert test developers jointly reviewing material that one or more of them had developed, and then accepting, modifying or rejecting that material for further development.

The coherence with and coverage of the assessment framework by the item set was closely monitored through the iterative item development process. Each assessment item was referenced to a single concept in aspect one of the assessment framework and to one of the two main organising processes (knowing or analysing and reasoning) in aspect two of the framework.

Item response types included: dual choice (true/false), multiple choice, closed and constructed item types. The number of score points allocated to items varied. Dual and multiple choice items had a maximum score of one point. Closed and constructed response items were each allocated a maximum of between one and three score points.

Consultation with outside experts and stakeholders occurred throughout the item development, with draft and revised versions of the items shared with the review committee, before and after trialling in the field trial.

## Field trial

A field trial was conducted in March 2013 in New South Wales, Victoria and Queensland. At Year 6, 60 schools participated with 1212 students completing the assessments. At Year 10, 58 schools participated with 1260 students completing the assessments. The sample of schools was a representative random sample, drawn from all sectors from the three states of Victoria, New South Wales and Queensland.

In each school, the field trial assessment involved up to 20 selected students in either Year 6 or Year 10. Each student completed a test of civic knowledge followed by a questionnaire about students' experience of, and engagement with, civic issues.

Depending on each sampled school's resources and preference, the assessment was either run in one session (with all 20 students participating at the same time) or in two sessions (with two smaller groups of students participating each time). Each assessment session took no longer than two hours.

In total 230 items were used in the field trial, 30 of which were secure trend items from previous assessment cycles used for the purpose of equating the field trial items to the NAP–CC scale. This equating was used to support item selection for the final assessment instrument. The items were presented in a balanced cluster rotation in test booklets. Thirteen clusters of items were established at each year level for the field trial. Each test booklet comprised three clusters. Each cluster appeared in three test booklets – once in the first, second and third position. Table 2.2 shows the booklet design for the NAP–CC field trial and main assessments.

**Table 2.2: Booklet design for NAP–CC main assessment**

Year 6				Year 10			
Booklet	Pos 1	Pos 2	Pos 3	Booklet	Pos 1	Pos 2	Pos 3
1	2	4	3	1	1	4	3
2	1	5	6	2	2	5	7
3	3	6	8	3	3	7	8
4	4	7	9	4	4	6	9
5	5	8	1	5	5	8	1
6	6	9	5	6	7	9	5
7	7	1	2	7	6	1	2
8	8	2	7	8	8	2	6
9	9	3	4	9	9	3	4

*Note: Shaded cells are the new 2013 clusters*

## Field trial outcomes

The trial data were analysed in a systematic way to determine the degree to which the items measured civics and citizenship proficiency according to both the NAP–CC scale and the assessment framework. The review committee then reviewed the data from the trial testing.

## Main study assessment instruments

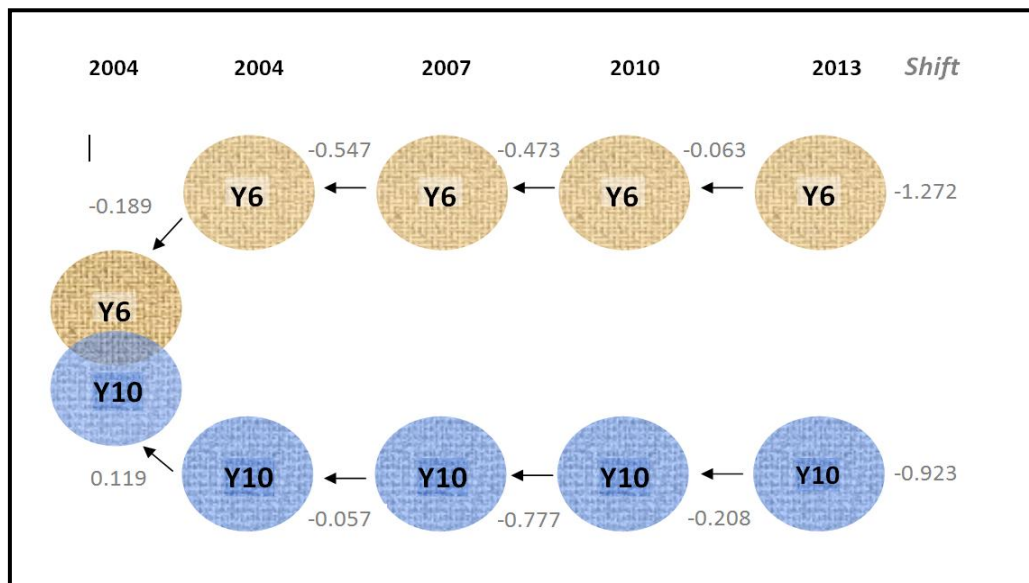
Schools from all states and territories, and from the government, Catholic and independent sectors, participated in the online NAP–CC assessment in 2013. Data were gathered from 5,777 Year 6 students from 342 schools and 5,478 Year 10 students from 329 schools.

The main assessment was conducted using nine test forms at both Year 6 and Year 10. Each test form contained approximately 36 items at Year 6 and approximately 42 items at Year 10. The assessment was conducted using a total of 172 items, with 102 of them being secure items from the 2010 assessment cycle.

As well as balancing the order and combinations of clusters across test forms each individual cluster was matched for reading load (length and difficulty), item type (closed constructed, short extended and dual and multiple choice items), number of items and use of graphic images. By matching each individual cluster for these characteristics it follows that each test form was considered as matched and equivalent according to the same characteristics.

As in the 2010 test cycle, the 2013 assessment instrument included a subset of secure (not released to the public) items from the previous assessment. These items enabled, through common item equating, the equating of the 2013 scale, via the 2010 and 2007 scales, onto the historical scale from 2004. This enables an examination of student performance over time. Two intact trend clusters were used at each year level as well as a smaller number of trend items that were allocated across the remaining clusters. Year 6 and Year 10 were equated separately from 2013 to 2010. After applying these shifts, the same transformations were used as in 2007. The transformations included 1) separate equating shifts for Year 6 and Year 10 from 2010 to 2007 to 2004, 2) separate equating shifts from separate Year 6 and Year 10 scales to a joint scale (the official scale in 2004) and 3) transformation of the logit scale to a scale with a mean of 400 and a standard deviation of 100 for Year 6 students in 2004. The equation process, excluding the transformations to a mean of 400 and a standard deviation of 100, are illustrated in Figure 2.1.

**Figure 2.1: Equating method from 2013 to 2004**



Eighty-one secure items were available for use in the 2013 assessment for equating. For horizontal equating between the 2013 and 2010 assessments, 44 out of 47 possible horizontal links were actually used for Year 6. For Year 10, 58 out of 63 were used.

## Scoring student responses

### Multiple-choice items

For the purpose of test item analysis, the selection made by a student was recorded by the test administration system and later scored as correct or incorrect.

### Constructed response items

Some items required students to respond using one or two sentences. These responses were captured by the test administration system and later delivered to scorers using a purpose-built online scoring system. Some of these items had scoring guides that allowed for dichotomous scoring (sufficient/insufficient) whereas others had scoring guides with partial credit (polytomous) scoring in which different categories of student responses could be scored according to the degree of knowledge, skill or understanding they demonstrated.

## Score guide

Draft score guides for the items were developed in parallel with the item development. They were then further developed during the field trial and the subsequent review of the items, which included consultation with the experts and stakeholders on the review committee and discussion with ACARA.

The dual and multiple choice items and some of the closed constructed and short extended response items had a score value of zero (incorrect) or one (correct).

Short extended response items can elicit responses with differing levels of complexity. The score guides for such items were developed to define and describe these different levels meaningfully. Empirical data from the field trial were used to confirm whether these semantic distinctions were indicative of actual differences in student achievement. In the cases where hierarchical differences described by the score guides were not evident in the field trial data these differences were removed from the scoring

guide. Typically this would involve providing the same credit for responses that previously had been allocated different levels of credit (this is referred to as *collapsing categories*).

Each score point allocation in the score guide was accompanied by a text which described and characterised the kind of responses which would attract each score. These score points were then illustrated with actual student responses. The response characterising text, combined with the response illustrations for each score point for each item, constituted the score guide.

The following is an item from the main study 2013 and the full score guide for this item. Key features of the score guide are:

- The summary description of the key substantive property of the responses of each level;
- The detailed description of the properties of the responses of each level; and
- Sample student responses that illustrate the properties of the responses at each level.

**Figure 2.2: Example item and scoring guide**

The Big Issue is a current affairs magazine that is sold on the streets of some Australian cities. The people who sell The Big Issue are homeless or disadvantaged people. They keep half of the money from each magazine they sell.

The people who sell The Big Issue get money for their work.

What are two other benefits of selling The Big Issue for the people who sell it?

**Scoring Guide:**

**Code 2:** Gives two plausible benefits: sense of independence/ belonging/connection/usefulness/empowerment OR dignity of work OR getting involved in the community OR practical skills

- Give them a sense of purpose/connection to the community
- Makes them feel important/needed
- It gives them something useful to do
- Helps develop social skills
- Helps them develop selling or accounting skills

**Code 1:** Name only one plausible benefit

**Code 0:** Repeats question or gives vague or irrelevant response

- It has enormous benefits/It's good for them

**Short Description:**

Interpret information about The Big Issue in the light of civic concepts

## Student questionnaire

Previous NAP–CC assessments in 2004 and 2007 included fairly brief student questionnaires dealing primarily with student civics and citizenship experiences within and out-of-school. The development of the assessment framework and explicit and implicit expectations of the SOL – CC and the Melbourne Declaration resulted in the review committee endorsing the inclusion of a significantly expanded questionnaire in NAP–CC 2010. This expanded questionnaire was used in NAP–CC 2010 and 2013.

The student questionnaire items were developed to focus on aspects three and four of the assessment framework. The items were reviewed by the review committee and refined on the basis of their feedback.

Students' attitudes towards civic and citizenship issues were assessed with questions covering five constructs:

- Importance of conventional citizenship behaviour;
- Importance of social movement related citizenship behaviour;
- Trust in civic institutions and processes;
- Attitudes towards Indigenous culture; and
- Attitudes towards Australian diversity.

Students' engagement in civic and citizenship activities was assessed with questions concerning the following areas:

- Participation in civic and citizenship related activities at school;
- Participation in civic and citizenship related activities in the community;
- Media use and participation in discussion of political or social issues;

- Interest in political or social issues;
- Confidence to actively engage in civic action;
- Valuing civic action;
- Intentions to promote important issues in the future; and
- Expectations of future civic engagement.

A copy of the student questionnaire can be found in Appendix A.2.

## Student background information

Information about individual and family background characteristics was collected centrally through schools and education systems (see Chapter 4 for more information on the method of collection). The background variables were gender, age, Indigenous status, cultural background (country of birth and main language other than English spoken at home), socio-economic background (parental education and parental occupation) and geographic location. The structure of these variables had been agreed upon by ACARA as part of NAP and follows the guidelines given in the *2012 Data Standards Manual – Student Background Characteristics* (ACARA 2012).

## Summary

For the first time in 2013, NAP–CC items were delivered online to students via the internet. Nine different test forms were uploaded for the NAP–CC 2013 cycle of assessment. The items were created at both Year 6 and Year 10 using the NAP–CC Assessment Framework, which has two main aspects: content and cognitive processes. Each test form contained approximately 36 items at Year 6 and approximately 42 items at Year 10. Additionally, students completed questionnaires, dealing primarily with student civics and citizenship experiences within and out-of-school. Background demographic information on participating students was also gathered during the testing process. The inclusion of items used in previous cycles enabled the equating of the 2013 scale, via the 2010 and 2007 scales, onto the historical scale from 2004. This enabled an examination of student performance in NAP–CC assessment cycles over time.

## CHAPTER 3

# SAMPLING AND WEIGHTING

### Introduction

This chapter describes the NAP–CC 2013 sample design, the procedures used to calculate the sampling weights, and the final participation rates. The sampling and weighting methods were used to ensure that the data provided accurate and efficient estimates of the achievement outcomes for the Australian Year 6 and Year 10 student populations.

### Sampling

The target populations for the study were Year 6 and Year 10 students enrolled in Australian schools.

A two-stage stratified cluster sample design was used in NAP–CC 2013. The first stage consists of a sample of schools, stratified according to state, sector, geographic location, the Socio-Economic Indexes for Areas (SEIFA) index of Education and Occupation<sup>5</sup> and school size; the second stage consists of a sample of 20 random students from the target year level in sampled schools. Samples were drawn separately for each year level.

#### *The sampling frame*

The school sampling frame was the ACER sampling frame, a comprehensive list of all schools in Australia, updated annually using information collected from multiple sources, including the Australian Bureau of Statistics and the Commonwealth, state and territory education departments.

#### *School exclusions*

Schools excluded from the target population included: ‘non-mainstream schools’ (such as schools for students with intellectual disabilities or hospital schools), schools listed as having fewer than five students in the target year levels and very remote schools (except in the Northern Territory). These exclusions account for 1.7 per cent of the Year 6 student population and 1.4 per cent of the Year 10 student population.

The decision to include very remote schools in the Northern Territory sample for 2013 was made on the basis that students in very remote schools constituted over 30 per cent of the Year 6 population and over 15 per cent of the Year 10 population in the Northern Territory (in contrast to less than 1% when considering the total population of Australia). The inclusion of very remote schools in the Northern Territory in the NAP–CC 2013 sample does not have any impact on the estimates for Australia as a whole or for individual states.

#### *The designed sample*

For both the Year 6 and Year 10 samples, sample sizes were determined that would provide precise estimates of achievement outcomes for all states and territories. The expected 95 per cent confidence interval widths were estimated in advance to be within approximately  $\pm 0.15$  to  $\pm 0.2$  times the population standard deviation for estimated means for the larger states. This level of precision was considered a reasonable balance between the analytical demands of the survey, the burden on individual schools and the overall costs of the survey. Confidence intervals of this magnitude require an effective

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<sup>5</sup> This is a measure of socio-economic status based on the geographic location of the school

sample size<sup>6</sup> of around 100-150 students in the larger states. Smaller sample sizes were deemed as sufficient for the smaller states and territories because of their relatively small student populations. As the proportion of the total population surveyed becomes larger the precision of the sample increases for a given sample size, this is known as the finite population correction factor.

In a complex, multi-stage sample such as the one selected for this study, the students selected within schools tend to be more alike than students selected across schools. Similarly, students within classes at a school tend to be more homogeneous than students across the year level. The effect of the complex sample design (for a given assessment) is known as the design effect. The design effect for the NAP–CC 2013 sample was estimated based on data from NAP–CC 2010. As noted in the paragraph above, given the change in the design towards sampling students from across the grade, the design effect was expected to be lower for this survey.

On this basis it was determined that target sample sizes of around 900 students at both year levels would be sufficient for larger states.

Table 3.1 shows the population of schools and students and the designed sample.

**Table 3.1: Year 6 and Year 10 target population and designed samples by state and territory**

	Year 6				Year 10			
	Population		Planned Sample		Population		Planned Sample	
	<i>Schools</i>	<i>Students</i>	<i>Schools</i>	<i>Students</i>	<i>Schools</i>	<i>Students</i>	<i>Schools</i>	<i>Students</i>
ACT	95	4,483	29	580	36	4,794	30	600
NSW	2,092	86,877	49	980	797	86,834	47	940
NT	111	3,035	32	640	50	2,652	28	560
QLD	1,161	57,612	48	960	455	58,304	48	960
SA	545	19,021	47	940	195	20,193	46	920
TAS	201	6,558	49	980	92	6,756	44	880
VIC	1,678	65,265	50	1,000	567	65,946	49	980
WA	724	28,279	50	1,000	253	28,627	49	980
<b>Australia</b>	<b>6,607</b>	<b>271,130</b>	<b>354</b>	<b>7,080</b>	<b>2,445</b>	<b>274,106</b>	<b>341</b>	<b>6,820</b>

### First sampling stage

Explicit stratification was applied by state, sector and school size. That is, separate independent samples were drawn for each sector as well as for small schools within states and territories. Prior to sampling each explicit stratum was ordered by geographic location, SEIFA and the number of students in the target year level.

Within each explicit stratum, the selection of schools was carried out using a systematic probability-proportional-to-size (PPS). For large schools, the measure of size (MOS) was equal to the enrolment at the target year. In order to minimise variation in weights, the MOS for very small schools (between 5 and 10 students) was set to 10, and the MOS for small schools (between 11 and 20 students) was set to 20.

The combination of ordering the frame by location, SEIFA and enrolment, and systematic PPS selection ensured that the sample within strata was implicitly stratified by these variables. Within strata the

<sup>6</sup> The effective sample size is the sample size of a simple random sample that would produce the same precision as that achieved under a complex sample design



expected yield across subpopulations defined by these variables was in line with their distribution in the population.

The MOS was accumulated from school to school and the running total was listed next to each school. The total cumulative MOS was a measure of the size of the population of sampling elements. Dividing this figure by the number of schools to be sampled provided the sampling interval.

The first school was sampled by choosing a random number between one and the sampling interval. The school, whose cumulative MOS contained the random number was the first sampled school. By adding the sampling interval to the random number, a second school was identified. This process of consistently adding the sampling interval to the previous selection number resulted in a PPS sample of the required size.

As each school was selected, the next school in the sampling frame was designated as a replacement school to be included in cases where the sampled school did not participate. The school previous to the sampled school was designated as the second replacement. It was used if neither the sampled nor the first replacement school participated. In some cases (such as secondary schools in the Northern Territory) there were not enough schools available for replacement samples to be drawn. Because of the use of stratification, the replacement schools were generally similar (with respect to geographic location, socio-economic location and size) to the school for which they were a replacement.

After the school sample had been drawn, a number of sampled schools were identified as meeting the criteria for exclusion. When this occurred, the sampled school and its replacements were removed from the sample and removed from the calculation of participation rates. Two schools were removed from the Year 6 sample and four schools were removed from the Year 10 sample. These exclusions are included in the exclusion rates reported earlier.

## Second sampling stage

The second stage of sampling consisted of the random selection of 20 students within sampled schools. Some students were excluded from being sampled.

### *Student exclusions*

Individual students were eligible to be exempted from the assessment on the basis of the criteria listed below.

1. *Functional disability*: Student has a moderate to severe permanent physical disability such that he/she cannot perform in the assessment situation.
2. *Intellectual disability*: Student has a mental or emotional disability and is cognitively delayed such that he/she cannot perform in the assessment situation.
3. *Limited assessment language proficiency*: The student is unable to read or speak the language of the assessment and would be unable to overcome the language barrier in the assessment situation. Typically, a student who has received less than one year of instruction in the language of the assessment would be excluded.

Whilst the majority of students falling into one (or more) of these categories were removed before student sampling was undertaken, a small number of these students were sampled due to the school not informing ACER of their exemption status. This was confirmed only after student sampling had taken place, and the school then notified ACER of the exemption. Table 3.2 and Table 3.3 detail the numbers and percentages of students excluded from the NAP–CC 2013 assessment after student sampling had occurred, according to the reason given for their exclusion.

**Table 3.2: Year 6 breakdown of student exclusions according to reason by state and territory**

	Enrolment in Participating Schools	Pre - Sample Exclusions				Reason Unknown/Not supplied	Weighted Post-sample Exclusions	Total Exclusions	Exclusion Rate (%)
		1.	2.	3.					
NSW	2422	5	21	10	0	8	44	1.8	
VIC	2393	10	28	6	0	3	47	2.0	
QLD	3669	25	41	18	2	1	87	2.4	
SA	2402	13	33	30	1	4	81	3.4	
WA	2467	5	7	24	0	1	37	1.5	
TAS	2040	4	9	6	0	2	21	1.0	
NT	1118	6	13	25	0	0	44	3.9	
ACT	1868	9	16	37	0	0	62	3.3	
<b>Australia</b>	<b>18379</b>	<b>77</b>	<b>168</b>	<b>156</b>	<b>3</b>	<b>19</b>	<b>423</b>	<b>2.3</b>	

**Table 3.3: Year 10 breakdown of student exclusions according to reason by state and territory**

	Enrolment in Participating Schools	Pre - Sample Exclusions				Reason Unknown/Not supplied	Weighted Post-sample Exclusions	Total Exclusions	Exclusion Rate (%)
		1.	2.	3.					
NSW	6906	11	28	18	0	0	57	0.8	
VIC	7695	17	44	173	0	25	259	3.4	
QLD	9248	89	125	96	9	26	345	3.7	
SA	7403	6	103	191	5	17	322	4.3	
WA	8780	12	28	84	0	0	124	1.4	
TAS	4984	24	26	43	8	6	107	2.1	
NT	2351	1	12	102	0	0	115	4.9	
ACT	4782	16	25	66	3	3	113	2.4	
<b>Australia</b>	<b>52149</b>	<b>176</b>	<b>391</b>	<b>773</b>	<b>25</b>	<b>77</b>	<b>1442</b>	<b>2.8</b>	

## Weighting

While the multi-stage stratified cluster design provides a very economical and effective data collection process in a school environment, oversampling of sub-populations and non-response cause differential probabilities of selection for the ultimate sampling elements, the students. Consequently, one student in the assessment does not necessarily represent the same number of students in the population as another. To account for differential probabilities of selection due to the design and to ensure unbiased population estimates, a sampling weight was computed for each participating student.

### *First stage weight*

The first stage weight is the inverse of the probability of selection of the school, adjusted to account for school non-response.

The probability of selection of the school is equal to its *MOS* divided by the sampling interval (*SINT*) or one, whichever is the lower. (A school with a *MOS* greater than the *SINT* is a certain selection, and therefore has a probability of selection of one. Some very large schools were selected with certainty into the sample.)

The sampling interval is calculated at the time of sampling, and for each explicit stratum it is equal to the cumulative *MOS* of all schools in the stratum, divided by the number of schools to be sampled from that stratum.

This factor of the first stage weight, or the school base weight, was the inverse of this probability

$$BW_{sc} = \frac{SINT}{MOS}$$

Following data collection, counts of the following categories of schools were made for each explicit stratum:

- the number of schools that participated ( $n_p^{sc}$ );
- the number of schools that were sampled but should have been excluded ( $n_x^{sc}$ ); and
- the number of non-responding schools ( $n_n^{sc}$ ).

Note that  $n_p^{sc} + n_x^{sc} + n_n^{sc}$  equals the total number of sampled schools from the stratum.

Examples of the second class ( $n_x^{sc}$ ) were:

- a sampled school that no longer existed; and
- a school that, following sampling, was discovered to have fitted one of the criteria for school level exclusion (e.g. very remote, very small), but which had not been removed from the frame prior to sampling.

In the case of a non-responding school ( $n_n^{sc}$ ), neither the originally sampled school nor its replacements participated.

Within each explicit stratum, an adjustment was made to account for school non-response. This non-response adjustment (*NRA*) for a stratum was equal to

$$NRA_{strt} = \frac{(n_p^{sc} + n_n^{sc})}{n_p^{sc}}$$

The first stage weight, or the final school weight, was the product of the inverse of the probability of selection of the school and the school non-response adjustment

$$FW_{sc} = BW_{sc} * NRA_{strt}$$

### Second stage weight

Following data collection, counts of the following categories of students were made for each sampled school:

- the total number of eligible students at relevant year level ( $n^{st}$ );
- the number of students who participated ( $n_p^{st}$ );
- the number of sampled students who were exclusions ( $n_x^{st}$ ); and
- the number of non-responding, sampled students ( $n_n^{st}$ ).

Note that  $n_p^{st} + n_x^{st} + n_n^{st}$  equals the total number of sampled students from the sampled school.

The first factor in the second stage weight was the inverse of the probability of selection of the student from the sampled school. This was computed as

$$BW_{st} = \frac{n_p^{st} - n_x^{st}}{n_p^{st} + n_n^{st}}$$

The student level non-response adjustment was calculated for each school as

$$NRA_{sc} = \frac{n_p^{st} + n_n^{st}}{n_p^{st}}$$

The final student weight was

$$FW_{st} = BW_{st} \times NRA_{sc}$$

## Participation rates

Separate participation rates were computed: (1) with replacement schools included as participants and (2) with replacement schools regarded as non-respondents. In addition, each of these rates was computed using unweighted and weighted counts. In any of these methods, a school and a student response rate was computed and the overall response rate was the product of these two response rates. The differences in computing the four response rates are described below. These methods are consistent with the methodology used in TIMSS (Olson, Martin & Mullis, 2008).

### *Unweighted response rates including replacement schools*

The unweighted school response rate, where replacement schools were counted as responding schools, was computed as follows

$$RR_1^{sc} = \frac{n_s^{sc} + n_{r1}^{sc} + n_{r2}^{sc}}{n_s^{sc} + n_{r1}^{sc} + n_{r2}^{sc} + n_{nr}^{sc}}$$

where  $n_s^{sc}$  is the number of responding schools from the original sample,  $n_{r1}^{sc} + n_{r2}^{sc}$  is the total number of responding replacement schools, and  $n_{nr}^{sc}$  is the number of non-responding schools that could not be replaced.

The student response rate was computed over all responding schools. Of these schools, the number of responding students was divided by the total number of eligible, sampled students.

$$RR_1^{st} = \frac{n_r^{st}}{n_r^{st} + n_{nr}^{st}}$$

where  $n_r^{st}$  is the total number of responding students in all responding schools and  $n_{nr}^{st}$  is the total number of eligible, non-responding, sampled students in all responding schools.

The overall response rate is the product of the school and the student response rates.

$$RR_1 = RR_1^{sc} \times RR_1^{st}$$

### Unweighted response rates excluding replacement schools

The difference of the second method with the first is that the replacement schools were counted as non-responding schools.

$$RR_2^{sc} = \frac{n_s^{sc}}{n_s^{sc} + n_{r1}^{sc} + n_{r2}^{sc} + n_{nr}^{sc}}$$

This difference had an indirect effect on the student response rate, because fewer schools were included as responding schools and student response rates were only computed for the responding schools.

$$RR_2^{st} = \frac{n_r^{st}}{n_r^{st} + n_{nr}^{st}}$$

The overall response rate was again the product of the two response rates.

$$RR_2 = RR_2^{sc} \times RR_2^{st}$$

### Weighted response rates including replacement schools

For the weighted response rates, sums of weights were used instead of counts of schools and students. School and student base weights (*BW*) are the weight values before correcting for non-response, so they generate estimates of the population being represented by the responding schools and students. The full weights (*FW*) at the school and student levels are the base weights corrected for non-response.

School response rates are computed as follows

$$RR_3^{sc} = \frac{\sum_i^{s+r1+r2} (BW_i \times \sum_j^{r_i} (FW_{ij}))}{\sum_i^{s+r1+r2} (FW_i \times \sum_j^{r_i} (FW_{ij}))}$$

where *i* indicates a school, *s* + *r1* + *r1* all responding schools, *j* a student and *r<sub>i</sub>* the responding students in school *i*. First, the sum of the responding students' FW was computed within schools. Second, this sum was multiplied by the school's BW (numerator) or the school's FW (denominator). Third, these products were summed over the responding schools (including replacement schools). Finally, the ratio of these values was the response rate.

As in the previous methods, the numerator of the school response rate is the denominator of the student response rate

$$RR_3^{st} = \frac{\sum_i^{s+r1+r2} (BW_i \times \sum_j^{r_i} (BW_{ij}))}{\sum_i^{s+r1+r2} (BW_i \times \sum_j^{r_i} (FW_{ij}))}$$

The overall response rate is the product of the school and student response rates

$$RR_3 = RR_3^{sc} \times RR_3^{st}$$

### Weighted response rates excluding replacement schools

Practically, replacement schools were excluded by setting their school *BW* to zero and applying the same computations as above. More formally, the parts of the response rates are computed as follows

$$RR_4^{sc} = \frac{\sum_i^s (BW_i \times \sum_j^{r_i} (FW_{ij}))}{\sum_i^{s+r1+r2} (FW_i \times \sum_j^{r_i} (FW_{ij}))}$$

$$RR_4^{st} = \frac{\sum_i^s (BW_i \times \sum_j^{r_i} (BW_{ij}))}{\sum_i^s (BW_i \times \sum_j^{r_i} (FW_{ij}))}$$

$$RR_4 = RR_4^{sc} \times RR_4^{st}$$

### *Reported response rates*

The school and student participation rates by year level and by state and territory are presented in Tables 3.4, 3.5, 3.6 and 3.7 below.

**Table 3.4: Year 6 numbers and percentages of participating schools by state and territory<sup>7</sup>**

	Sample	Closed/ Ineligible Schools	Eligible Schools	School refusals	Schools replacements	Participating Schools	Schools with < 50% response rate	Total Number of Participating Schools meeting response rate requirements	Unweighted School Participation Rate (%)
ACT	29	0	29	1	1	29	0	29	100
NSW	49	1	48	0	0	48	2	46	96
NT	32	3	29	0	0	29	4	25	86
QLD	48	0	48	0	0	48	0	48	100
SA	47	0	47	0	0	47	3	44	94
TAS	49	3	46	0	0	46	0	46	100
VIC	50	3	47	1	1	47	1	46	98
WA	50	0	50	0	0	50	3	47	94
Australia	354	10	344	2	2	344	13	331	96

<sup>7</sup> Note that these figures differ from the number of schools reported in the Public Report because schools with low response rates are excluded from the participation rate calculations. Of the 13 Year 6 schools with response rates <50%, two had response rates <25% and were discarded. The rest (11) were included in the analysis but not in the estimation of participation rates.

**Table 3.5: Year 10 numbers and percentages of participating schools by state and territory<sup>8</sup>**

	Sample	Closed/ Ineligible Schools	Eligible Schools	School refusals	Schools replacements	Participating Schools	Schools with < 50% response rate	Total Number of Participating Schools meeting response rate requirements	Unweighted School Participation Rate (%)
ACT	30	1	29	0	0	29	1	28	97
NSW	47	0	47	0	0	47	1	46	98
NT	28	4	24	0	0	24	7	17	71
QLD	48	0	48	0	0	48	1	47	98
SA	46	0	46	0	0	46	0	46	100
TAS	44	3	41	0	0	41	1	40	98
VIC	49	2	47	0	0	47	0	47	100
WA	49	0	49	0	0	49	0	49	100
Australia	341	10	331	0	0	331	11	320	97

<sup>8</sup> Note that these figures differ from the number of schools reported in the Public Report because schools with low response rates are excluded from the participation rate calculations. Of the 11 Year 10 schools with response rates <50%, two had response rates <25% and were discarded. The rest (9) were included in the analysis but not in the estimation of participation rates.



**Table 3.6: Year 6 numbers and percentages of participating students by state and territory**

	Number of sampled students in participating schools	Number of exclusions	Number of eligible students	Number of Absentees (including parental refusal)	Number of participating students	Unweighted student participation rate (%)	Unweighted overall participation rate (%)
ACT	577	0	577	42	535	93	93
NSW	874	3	871	79	792	91	87
NT	475	0	475	101	374	79	68
QLD	930	1	929	54	875	94	94
SA	910	2	908	141	767	84	79
TAS	878	1	877	97	780	89	89
VIC	864	2	862	81	781	91	89
WA	953	1	952	131	821	86	81
Australia	6461	10	6451	726	5725	89	85

**Table 3.7: Year 10 numbers and percentages of participating students by state and territory**

	Number of sampled students in participating schools	Number of exclusions	Number of eligible students	Number of Absentees (including parental refusal)	Number of participating students	Unweighted student participation rate (%)	Unweighted overall participation rate (%)
ACT	580	1	579	104	475	82	79
NSW	940	0	940	119	821	87	85
NT	402	0	402	138	264	66	47
QLD	936	3	933	135	798	86	84
SA	909	3	906	175	731	81	81
TAS	809	1	808	116	692	86	84
VIC	934	2	932	115	817	88	88
WA	980	0	980	147	833	85	85
Australia	6490	10	6480	1049	5431	84	81

## CHAPTER 4 DATA COLLECTION PROCEDURES

### Introduction

Well-organised and high quality data collection procedures are crucial to ensuring that the resulting data are also of high quality. Data collection for NAP–CC 2013 was an iterative process which involved both pre-and post- test administration data collection from schools and educational authorities, in addition to the collection of student achievement data. This chapter outlines the data collection procedures implemented for NAP–CC 2013 and provides an overview of the assessment data marking operation and the creation of the subsequent interactive school summary reports.

These data collection procedures are summarised in Table 4.1 below.

**Table 4.1: Procedures for data collection**

ACER Activity	School Activity
Initial contact is made with principals of sampled schools; nomination of School Contact and IT Coordinator requested via online form	Principals complete registration details and School Contact / IT Coordinator nominations via online form
Preferred assessment dates and student List for Yr 6 or Yr 10 students requested from every School Contact	School Contacts upload requested information to the School Administration website
Sample of 20 students from each school selected and School Contact informed of student names via website	School Contact informs selected students of their involvement and informs parents of students in line with school policy
Final assessment date for each school confirmed and test delivery schedule finalised	School Contact informed all necessary staff and students of selected date and reserves computer lab for this period
Technical Readiness Test (TRT) instructions sent to IT Coordinators and test results monitored and, where necessary, followed up	IT Coordinators undertake TRT. Minimum specifications are captured and any problems are flagged via online survey
Test delivery method for each school (i.e. online or USB delivery) confirmed	
Student Background Data (SBD) requested from School Contacts for each of the 20 sampled students (from jurisdictions not supplying these data directly to ACER)	SBD uploaded to School Administration website
Test administrators (TAs) for assessment are selected and trained (includes dissemination of TA Manual)	
Yr 6 and Yr 10 NAP-CC assessments are administered	Host assessment with TA assistance
Data are cleaned and constructed response items are marked	
Online interactive school and student summary reports created and login details sent to all participating schools	School Contacts access interactive summary reports and share with staff and students (in line with their own school's policy)

### Contact with schools

The field administration of NAP–CC 2013 required several stages of contact with the sampled schools to request or provide information.

In order to ensure the participation of sampled schools, education authority liaison officers were appointed for each jurisdiction. The liaison officers were expected to facilitate communication between ACER and the selected schools from their respective jurisdictions. The liaison officers helped to achieve a high participation rate for the assessment and also followed up with any non-responding schools over the course of the pre-administration data collection phase. This in turn helped to ensure valid and reliable data were obtained from all participating schools.

The steps involved in contacting schools are described below.

Initially, principals of sampled schools were contacted by liaison officers to inform them of their selection. If the sampled school was unable to take part (as confirmed by the education authority liaison officer), a replacement school was contacted.

After this initial correspondence, ACER then made contact with the principals of sampled schools to provide more information about the assessment and what it would involve for the school, their staff and students. Principals were at this stage asked to nominate a School Contact person who would coordinate the assessment in the school, and an IT Coordinator, who would perform the technical readiness testing of the computers to be used for the assessment.

Following their nomination, School Contacts were sent the *School Contact Manual* and were asked to provide three possible assessment dates that were convenient for the school, and to list all of the Year 6 or Year 10 students in the school using the cohort listing form on the School Administration Website. At this time, they were asked to provide the gender and exclusion status (if applicable) of each student listed.

IT Coordinators were asked to perform a Technical Readiness Test (TRT) on each of the computers to be used on assessment day. This TRT simulated the test environment so as to ascertain whether certain test elements and functions displayed/performed as expected on the school computers. The TRT also captured the specifications of the computers on which it was run, which were in turn analysed by ACER staff to ensure they complied with minimum requirements. IT Coordinators were also asked to complete a short online survey asking them to detail any problems they encountered when running the TRT, and asking them to provide details of any other foreseeable issues (e.g. any expected internet connection disruptions or planned updates/upgrades to their network or computer devices). Responses to this survey were monitored by ACER staff and follow up phone calls or emails were made to rectify any problems.

At each of the stages requiring information to be sent from schools, a timeframe was provided for the provision of this information. If the school did not respond in the designated timeframe, follow-up contact was made via email and telephone. Matters were escalated to School Liaison Officers at the relevant educational authority if no response from a school was forthcoming.

Once the assessment date and random student sample were selected by ACER, the School Contacts were informed of these details via email and notification on the School Administration Website. ACER Test Administrators then liaised with each School Contact so as to confirm the time of assessment and to discuss any special provisions needed for the assessment day.

The Test Administrators then visited the schools on the scheduled day to administer the assessment. If 80 percent attendance rates were not reached on the initial assessment day, further visits were made to the school to assess the remaining sampled students.

After the administration of the assessment, final contact was made with each school in order to send them the login for their online interaction school and student summary reports and to thank them for their participation.

## The NAP–CC Online School Administration Website

All administrative information provided by schools was submitted to ACER via a secure website: the NAP–CC School Administration Website. Each school had their own website account which could be accessed with a school specific username and password.

The benefits of the website were two-fold: it eased the administrative burden on the selected schools and it also provided a convenient, intuitive and secure repository for all school data relating to the NAP–CC assessment. Schools were able to download all relevant NAP–CC administrative materials from this site and used it to provide information to ACER regarding school contact details, assessment date preferences, student lists and student background information (where this information was not provided by the relevant educational authorities in a given school’s jurisdiction).

In addition to a homepage which contained all the latest news, documents and information about the assessment, the website comprised the following web pages:

- The School Details page. This page was used to collect school address details, as well as contact information for the Principal, the School Contact and the IT Coordinator.
- The Assessment Date page. This page asked the School Contact to nominate three possible dates for the assessment to take place that were convenient for the school. The final date chosen by ACER was then displayed on this page for the school’s reference;
- The Cohort List page. This page contained a downloadable student listing template which enabled the School Contact to complete and upload the list of students in the designated year level (together with students’ gender and exemption status) so that ACER could create a random student sample for the cohort; and
- The Student Background page. This page provided a downloadable template for school contact officers to complete and upload the background information for the sampled students.

### *Collection of student background information*

In 2004, Australian Education Ministers agreed to implement standard definitions for student background characteristics (detailed in the 2012 Data Standards Manual (ACARA 2012)), to collect student background information from parents and to supply the resulting information to testing agents so that it can be linked to students’ test results. The information collected included: sex, date of birth, country of birth, Indigenous status, parents’ school education, parents’ non-school education, parents’ occupation group, and students’ and parents’ home language (note: the full list of variable definitions, along with the transformation rules used to derive further variables, are provided in Chapter 5).

The student identification numbers used in the background information collection process were included in all assessment materials so that each set of student test responses could be identified and correctly matched to the background information.

Student background data were collected for participating students in one of two ways. For some jurisdictions, central educational authorities were able to provide the coded data directly to ACER by data matching with their records by school and student name and ID number. Where data collection from educational authorities was not possible, ACER collected these data from the schools themselves via the NAP-CC School Administration Website. The data collection method for each jurisdiction is provided in Table 4.2.

**Table 4.2: Provision of Student Background Data**

State/Territory	Sector	Source
<b>Australian Capital Territory</b>	Government	Central authority
	Catholic	Central authority
	Independent	Central authority
<b>New South Wales</b>	Government	Central authority
	Catholic	School
	Independent	School
<b>Northern Territory</b>	Government	Central authority
	Catholic	School
	Independent	School
<b>Queensland</b>	Government	Central authority
	Catholic	School
	Independent	School
<b>South Australia</b>	Government	School
	Catholic	Central authority
	Independent	School
<b>Tasmania</b>	Government	Central authority
	Catholic	Central authority
	Independent	School
<b>Victoria</b>	Government	School
	Catholic	School
	Independent	School
<b>Western Australia</b>	Government	Central authority
	Catholic	School
	Independent	Central authority

For NAP–CC 2013, the preferred collection method for these data was through the education authority in each jurisdiction, so as to avoid burdening schools with this administrative task. As evidenced from Table 4.2, provision of student background data directly from education authorities occurred in just under 50 percent of jurisdictions. Where jurisdictional-level data collection was possible, ACER uploaded to a secure file transfer site an electronic dataset containing identification information for all sampled students from that jurisdiction (including student name, student ID, school name and school ID). Educational authorities then returned this completed dataset to ACER via the file transfer site.

To facilitate school-based data collection for the remaining jurisdictions, ACER created an Excel template into which schools could paste the relevant background details for each sampled student. This template was then uploaded by each school onto the NAP–CC School Administration Website.

It is important to note that the collection of student background data, both from schools and central authorities, is an iterative process. The ability of ACER to collect these data depends on how complete the records are kept at a school and/or central level, and on the schools' and/or central authority's ability to supply ACER with these data in a timely manner.

An analysis of student performance by background variables can be found in the 2013 NAP–CC public report.

## Within-school procedures

The NAP–CC 2013 assessment took place within schools during schools hours. For this reason, the participation of school staff in the organisation and administration of the assessment was an essential part of the field administration. This section outlines the key roles within schools.

### *The school contact officer*

Participating schools were asked to appoint a school contact person to coordinate the assessment within the school. Each School Contact was provided with a manual (the *School Contact Manual*) that described in detail what was required at each stage of the data collection process. Their duties included:

- providing ACER with contact details for the school’s IT Coordinator and ensuring they supplied the required information about their school’s computer resources;
- providing ACER with the school’s preferred assessment dates, student cohort list and, if applicable, student background data for the selected students;
- scheduling the assessment and booking a room—with an appropriate number of co-located computers with power supply equipment – for the assessment session/s;
- notifying teachers, students and parents about the assessment, according to their school’s policies (parental consent forms were *not* required for student participation in this assessment);
- in the week before the assessment, ensuring that the IT Coordinator checked that all of the computers to be used in the assessment are working and ‘test ready’; and
- assisting the ACER Test Administrator with final arrangements on assessment day (this did not involve assessment administration).

### *The IT Coordinator*

The primary method of test delivery at schools was via school computers connected to the internet. For this reason, it was imperative to have someone at each school test the school’s capacity to access and run the test materials before assessment day. The principal of each participating school was therefore asked to nominate one individual to be the IT liaison between the school and ACER. This person was known as the IT Coordinator.

IT Coordinators were asked to perform three tasks in the months leading up to the school’s nominated assessment day in order to ensure that the assessment would run without issue. These tasks were:

**Task 1 – Simple Connectivity Test:** IT Coordinators were asked to run this test on 19 of the 20 devices that students would be using on assessment day. It essentially tested whether or not these devices were able to successfully connect to the assessment website. In many cases it was found that the IT Coordinator had to manually white list the assessment website in order to connect successfully.

**Task 2 – Comprehensive Test:** IT Coordinators were asked to run this test on just one of the 20 devices that were to be used on assessment day. As the name implies, this test was more comprehensive than the simple tests previously run, in that it tested whether or not the assessment application functioned and displayed correctly on the school’s devices. This step also collected important device specification information (such as operating system, browser type and version, screen resolution), as well as estimated bandwidth speed.

**Task 3 – Feedback Survey:** IT Coordinators were asked to provide ACER with feedback on the results of the first two tasks by completing a short online survey. They were also asked to detail any other

foreseeable technical issues that would need to be accounted for when making arrangements for test day (e.g. any expected connectivity disruptions or planned upgrades).

As mentioned previously, data captured from the comprehensive test and responses to the feedback survey were monitored by ACER staff. Any issues (perceived or otherwise) were followed up with the IT Coordinator directly via email and/or phone. If any issues regarding connectivity or browser version could not be resolved, the school was flagged as a potential USB delivery school.

The TRT instructions sent to the IT Coordinators at each school are provided in Appendix B.1.

## Test Administration

### *The test administrator*

In total, 80 Test Administrators (TAs) were employed nationally by ACER to administer the tests at all 665 standard delivery schools. The number of TAs employed in each state and territory is provided in Table 4.3 below.

**Table 4.3: Number of Test Administrators by state**

State	TAs appointed
ACT	5
NSW	14
NT	6
QLD	11
SA	9
TAS	9
VIC	11
WA	15
<b>Grand Total</b>	<b>80</b>

TAs were required to successfully complete ACER’s NAP–CC test administrator training program in order to be employed for this role. The training program comprised three distinct training elements. These were:

1. **TA Manual and Test Instructions Handbook.** TAs were required to reading and understand the TA Manual, the TA Test Instructions Handbook, and all associated documentation prior to their allocated school visits. In addition to the pre-administration material, TAs were also expected to read the series of TA ‘Newsletters’ issued throughout the assessment period. These newsletters provided TAs with important information about any technical issues/developments, or any changes to procedure with regard to test administration. All materials were emailed to TAs as they became available, and were also posted on the TA Website for download at any time.
2. **Online training modules.** ACER developed a number of online training modules for TAs to view in the lead up to the assessment period. These modules, or online training videos, were accessible via the TA Website, and TAs were encouraged to watch them several times to

familiarise themselves with all test administration procedures, as well as the administrative processes inherent to the project.

3. **TA assessment via teleconference.** Each TA was required to take part in a one-hour teleconference with the NAP–CC Project Team at ACER. The teleconference provided an opportunity for ACER to update TAs on any recent changes to procedures, and ensured that all TAs were ‘on the same page’ with regard to what was required in the lead up to, during, and after, a school’s assessment day.

During the teleconference, TAs were each asked a number of questions with regard to NAP–CC test administration procedures and associated administrative processes, and were encouraged to ask questions about any element of the project with which they were unfamiliar or uncertain.

In addition to the training program, TAs were also supported via email and telephone (toll-free help line) prior to, and for the duration of, the assessment period.

The primary responsibility of the TA was to administer NAP–CC 2013 to the sampled students, according to the standardised administration procedures provided in the *TA Manual* and *TA Test Instructions Handbook*. The TA’s responsibilities included:

- successfully undertaking all ACER training as required;
- contacting the School Contact person at each of their allocated schools and ensuring that they had scheduled the assessment and booked a room – with an appropriate number of co-located computers with power supply equipment – for the assessment session/s;
- ensuring that the School Contact had notified teachers, students and parents about the assessment, in accordance with their school’s policies;
- ensuring, in the week before the assessment, that the School Contact had confirmed with the IT Coordinator that all of the computers to be used in the assessment were working;
- administering the online assessment and questionnaire at each of their allocated schools and conducting any supplementary assessments at these schools, if required; and
- providing structured feedback to ACER on student attendance, issues experienced and any other relevant information, for each of their allocated schools on the day of assessment via the Test Administrator Website.

#### *The test administrator website*

In 2013, a website was created for use by the NAP–CC Test Administrators. This website had two main purposes:

1. It provided an easy-to-use repository for all the school-related information needed by each TA. It listed each TA’s allocated schools and contained important information about each school for their review. This information included:
  - the assessment date for each school;
  - the name and contact details of the school contact officer and principal at each school;
  - the address of the school;
  - the names of all students selected to participate in the assessment; and
  - any other important information about the school’s participation (e.g. whether the school required the TA to bring in laptops for the students to use).



- It allowed TAs to relate important information about student participation in the assessment in a secure, fast and reliable manner after the assessment had taken place. The portal provided TAs with a means of informing ACER which students did not take part in the assessment, and for what reason, and also enabled them to enter any comments or concerns about the school’s participation in the assessment more generally.

This website was designed to assist TAs in administering the assessment to their allocated schools, and they were encouraged to use it as much as possible throughout the administration of NAP–CC 2013.

### *The test administration period*

Schools were able to schedule the assessment on a day that suited them within the official assessment period. In 2013, the assessment period for each jurisdiction was as follows:

**NSW, NT, QLD & Vic:      Wed 9 Oct– Tues 5 Nov**

**ACT, SA, Tas & WA:      Wed 16 Oct – Tues 5 Nov**

The NAP–CC assessment consisted of 10 minutes of practice questions and introductory explanations by the TA, followed by the assessment session, which was timed at 60 minutes (max) for Year 6 students, and 75 minutes (max) for Year 10 students. Students were then given a short break before they were asked to complete a 15 minutes questionnaire.

The test administration times were designed to fit with known teaching patterns with the intent of allowing for minimal disruption to the school and pupil classroom attendance patterns. Table 4.4 shows the suggested timing of the assessment session.

**Table 4.4:      The suggested timing of the assessment session**

<b>Activity</b>	<b>Year 6</b>	<b>Year 10</b>
<b>Instructions and Practice Questions</b>	10 minutes	10 minutes
<b>Part A: Assessment Items</b>	60 minutes	75 minutes
<b>Break</b>	5 minutes	5 minutes
<b>Part B: Student Questionnaire</b>	15 minutes	15 minutes

### *Assessment administration*

A total of 671 schools from all states and territories, and from the government, Catholic and independent sectors, participated. Data were gathered from 5,777 Year 6 students from 342 schools and 5,478 Year 10 students from 329 schools.

### *Data capture and back up*

The primary delivery mode had students completing the assessments over the internet. However, the ministerial decision to implement online testing in the NAP sample assessments included the expectation that the delivery of the assessments would not compromise the representativeness of the sample of students completing them. Given that that 2013 was the first time the NAP–CC tests had been administered on computer (and using the internet) the tests were administered by trained test administrators rather than by classroom teachers.

As an additional measure, a backup delivery method was available in which the tests were run on USB drives. This backup solution ensured that the tests could be administered in schools where internet delivery was not available on the day of testing. Each test administrator carried a set of USB drives with

them to schools so they could implement the USB delivery if required. Student responses could then be uploaded from the USB drives to the central computer at a later date. This backup system was used in a small number of schools (11) and ensured that the integrity of the sample of students completing the assessments.

### *Flexible delivery*

In order to include very remote schools in the sampling frame for this assessment, modifications to the assessment and standard method of administration were made for 17 extremely remote schools in the Northern Territory. These modifications included:

- the School Contact administering the assessment instead of an external test administrator (ACER funded two teacher relief days for each flexible delivery school so that teachers could make use of additional assistance over the assessment period);
- administering the assessment to groups of students, or to individuals, when it was possible and appropriate (as opposed to on one scheduled day);
- being able to read out the instructions and questions to the students.

These provisions aimed to improve the quality and representativeness of data from the very remote schools sampled in NAP–CC, and therefore provided a more representative picture of the achievements of Australian students in the domain of civics and citizenship.

### *Return visits to schools*

Test administrators were obliged to return to a total of 25 schools. The principal reason for a return visit to a school was due to less than 80% of sampled students being available on the day of assessment (due to illness or other unexpected absenteeism), thereby making a follow up visit necessary to reach the requisite 80% minimum attendance.

### *Online marking procedures and marker training*

The marking of both the trial and final survey assessment items took place at the ACER marking centre in Sydney. As all the student questionnaire and achievement data were collected electronically, this assessment program did not require data entry.

ACER employed 15 markers to score the NAP–CC student responses over a two week period in both the field trial (March) and the main survey (November). The same markers from the field trial and previous cycles of the assessment were used for the main study marking operation. This assisted in maintaining the consistency of the application of the marking rubric for the trend items, as well as making the training process more efficient and reliable.

Markers were trained on one item from one module at a time and then scored all student responses for this one item. This meant that markers were focused only on one item at a time, making it easier to remember scoring criteria and enabling markers to rapidly score a large set of data.

Between 6 and 15 student responses were pre-selected for each training item so as to cover the complete range of student responses for that item. These pre-selected responses were given a score by the marking supervisor and as the markers moved through the items, the marking software then provided a summary of the scores given by the marker compared to the score given by the supervisor. In the event that a marker gave a score that was inconsistent with the score given by the supervisor, the item content and the scoring criteria were discussed and clarified, until agreement and consensus occurred.

Across all markers, 10% of responses were spot-checked by the designated lead markers. The check marking process provides an opportunity to identify when particular items are being marked inconsistently either by the whole group or an individual marker. If inconsistent marking was identified,

the markers were retrained on the specific item and the responses were remarked. This in turn improves the quality of the data used in school and public reports.

## School reports

ACER developed interactive online school and student reports for dissemination to the School Contacts and Principals at each of the participating schools. These reports were developed in the ACER Online Assessment and Reporting System (OARS). They are based on the same data as used in previous cycles, but allow for users to switch between whole school and individual student reports and to filter and sort data to view information grouped by categories of interest (such as by student gender or item format).

The school reports contained a description of the properties of a high quality response to each item; the maximum possible score for each item; the percentage of students in the National Assessment who achieved the maximum score on each item; and the achievement of each student on each item.

The individual student report contained the same student and item information as shown in the school report. However, the student report showed the question and performance information only for those questions in the test booklet presented to that individual student. Because students were assigned a different rotation of item sets each item set would only contain results from a subset of students from each school.

A copy of the Instructional Guide which was sent to each school and which explained how to access the site and how to read the results, is provided in Appendix B.2.

## CHAPTER 5

### DATA MANAGEMENT

#### Introduction

The information collected by ACER throughout the data collection phase established an accurate and reliable dataset, as outlined in the previous chapter. The maintenance of this level of quality then becomes aligned with data management processes put in place after data collection. This chapter provides details of how the information was derived, how it was stored and what steps were taken to maintain the quality of the data.

#### Information management

In order to track schools and students throughout the data collection phase and administration of the assessment, one central, secure database was constructed.

A system of identification (ID) codes was used to track information in the database. The *sampling frame ID* was a unique ID for each school that linked schools in the sample to the original sampling frame. The *school ID* was a concatenation of 1-digit codes relating to cohort, state and sector as well as a unique school number. The *student ID* included the school ID and also a student number (unique within each school).

#### Sample data

The sample data were produced by the sampling team and comprised a list of all sampled schools together with their replacements. Information provided about each school included address details, school level variables of interest (*sector*, *geolocation*, and the *Socioeconomic Indexes for Areas (SEIFA)*), sampling information such as *Measure of Size (MOS)* and the school's participation status.

The participation status of each school was updated as needed by the survey administration team. After the assessment, this information was required for computing the school sample weights needed to provide accurate population estimates (see Chapter 3).

#### School and student data

The school-level data were largely derived from the sample data. The database identified the sampled schools and their matching replacement schools and also identified the participation status of each school. For each participating school, contact information for the Principal, the School Contact and the IT Coordinator was stored, along with the school address, information about the school's computer resources and a history of contact with the School Contact and IT Coordinator. These records were then linked to student sample and identification information once the random student sample for each school was drawn.

The database was also linked to the NAP–CC School Administration Website so that any changes in contact information, preferred assessment dates and student cohort lists made by the School Contact, would be reflected in the database without the need for manual updating.

After the assessment had been administered, student participation information supplied from test administrators on the test administrator web portal was cross referenced with the cognitive and questionnaire data sourced from each sampled student so that any instances of missing data could be

flagged. In the event of any inconsistencies being detected between data records, each instance was investigated and subsequently remedied as outlined in the data cleaning section below.

Information from the database was also cross-referenced with the student background information, responses to test items, achievement scale scores, responses to student questionnaire items, attitude scale scores, final student weights and replicate weights so as to confirm the quality and completeness of student and school data.

## Final student data

The final student data came from three sources:

1. the cognitive assessment data and student questionnaire data;
2. the student background data and student participation data obtained from the student tracking database; and
3. school level variables transferred from the sample database.

In addition to these variables, student weights and replicate weights were computed and added to the database. The processes undertaken to collect these data were outlined in Chapter 4.

## Data cleaning

The following steps were undertaken to clean the cognitive, questionnaire and background data:

- Students with duplicate records and all dummy students (used for testing/training exercises) were removed from the database.
- Students with no valid responses to the cognitive test were removed.
- Patterns of missing values were explored and where appropriate recoded into not reached.
- After computing the age of students in years, all ages outside a range of four years for Year 6 and six years for Year 10 (from 10 to 14 years in Year 6 and from 13 to 18 years in Year 10) were set to missing.
- Missing sex of the student was imputed, where gender could be inferred from the school (i.e. where single-sex) or name of the student.
- All dates of birth were converted to the standard dd/mm/yyyy format and any auto-formatting conducted by Excel, which rendered dates of birth illegible, was reversed and corrected.
- Any extra students sampled within a school were removed from the database.
- Any student that experienced a serious technical issue (i.e. a computer crash that could not be resolved) during testing was removed from the database.

## Student background data

The student list contained the student background variables that were required. Table 5.1 presents the definitions of the variables used for collection.

**Table 5.1: Variable definitions for student background data**

Category	Description	Codes
<b>Sex</b>	Sex of student	M = male F = female
<b>Date of Birth</b>	Date of birth of student	Free response dd/mm/yyyy
<b>Country of Birth</b>	Country student was born in	1101 = Australia; Codes for all other countries as per Standard Australian Classification of Countries (SACC) Coding Index 2nd Edition
<b>Indigenous Status</b>	A student is considered to be 'Indigenous' if he or she identifies as being of Aboriginal and/or Torres Strait Islander origin.	1 = Aboriginal but not TSI origin; 2 = TSI but not Aboriginal origin; 3 = Both Aboriginal and TSI origin; 4 = Neither Aboriginal nor TSI origin; 9 = Not stated/unknown.
<b>Parent School Education</b>	The highest year of primary or secondary education a parent/guardian has completed.	1 = Year 9 or below; 2 = Year 10; 3 = Year 11; 4 = Year 12; 0 = Not stated/unknown/Does not have Parent 1 or 2.
<b>Parent Non-School Education</b>	The highest qualification attained by a parent/guardian in any area of study other than school education.	5 = Certificate I to IV (including Trade Certificate); 6 = Advanced Diploma/Diploma; 7 = Bachelor Degree or above; 8 = No non-school qualification; 0 = Not stated/unknown/Does not have Parent 1 or 2.
<b>Parent Occupation Group</b>	The occupation group which includes the main work undertaken by the parent/guardian.	1 = Senior management; professionals; 2 = Other management; associate professionals; 3 = Tradespeople; skilled office, sales and service; 4 = Unskilled workers; hospitality; 8 = Not in paid work in last 12 months; 9 = Not stated/unknown/Does not have Parent 1 or 2.
<b>Student / Parent home language</b>	The main language spoken in the home by the respondent.	1201 = English; Codes for all other languages as per the Australian Standard Classification of Languages (ASCI) Coding Index 2nd Edition

Variables were also derived for the purposes of reporting achievement outcomes. The transformations undertaken followed the guidelines in the 2012 Data Standards Manual (ACARA 2012). Table 5.2 shows the derived variables and the transformation rules used to recode them.

**Table 5.2: Transformation rules used to derive student background variables for reporting**

Variable	Name	Transformation rule
Geolocation - School	GEOLOC	Derived from MCEETYA Geographical Location Classification
Gender	GENDER	Classified by response; missing data treated as missing unless the student was present at a single-sex school or unless deduced from student name.
Age – Years	AGE	Derived from the difference between the Date of Assessment and the Date of Birth.
Indigenous Status	INDIG	Coded as Indigenous (1) if response was ‘yes’ to Aboriginal, OR Torres Strait Islander OR Both. Else coded as non-Indigenous (0)
Country of Birth	COB	The reporting variable (COB) was coded as 'Australia' (1) or 'Not Australia' (0) according to the SACC codes.
LBOTE	LBOTE	Each of the three LBOTE questions (Student, Mother or Father) was re-coded to 'LBOTE' (1) or 'Not LBOTE' (0) according to ASCL codes. The reporting variable (LBOTE) was coded as 'LBOTE' (1) if response was 'LBOTE' for any of Student, Mother or Father. If all three responses were 'Not LBOTE' then the LBOTE variable was designated as 'Not LBOTE' (0). If any of the data were missing then the data from the other questions were used. If all of the data were missing then LBOTE was coded as missing.
Parental Education	PARED	Parental Education equalled the highest education level (of either parent). Where one parent had missing data the highest education level of the other parent was used. Only if parental education data for both parents were missing, would Parental Education be coded as ‘Missing’.
Parental Occupation	POCC	Parental Occupation equalled the highest occupation group (of either parent). Where one parent had missing data or was classified as ‘Not in paid work’, the occupation group of the other parent was used. Where one parent had missing data and the other was classified as ‘Not in paid work’, Parental Occupation equalled ‘Not in paid work’. Only if parental occupation data for both parents were missing, would Parental Occupation be coded as ‘Missing’.

### *Cognitive achievement data*

The cognitive achievement data was collected with a computer-based assessment. Following data cleaning, the cognitive items were used to construct the NAP–CC proficiency scale. Chapter 6 details the scaling procedures used. The final student database contained original responses to the cognitive items and the scaled student proficiency scores. In total, 110 items were used for scaling Year 6 students and 122 for Year 10 students.

Four codes were applied for missing responses to cognitive items. Code **9** was used for *embedded missing* responses, code **r** was used for *not reached* items (consecutive missing responses at the end of a booklet with exception of the first one which was coded as embedded missing) and code **n** for *not administered* (when the item was not in a booklet).

### *Student questionnaire data*

The student questionnaire was included to assess the affective and behavioural processes described in Aspects 3 and 4 of the assessment framework. The questionnaire included items measuring constructs within two broad areas of interest: students' attitudes towards civics and citizenship issues, and students' engagement in civics and citizenship activities. The content of the constructs are described in Table 5.3 and the questionnaires for both Year 6 and Year 10 are provided in Appendix A.2.

Student responses to the questionnaire items were, when appropriate, scaled to derive attitude scales. The methodology for scaling questionnaire items is consistent with the one used for cognitive test items and is described in Chapter 6.

Missing responses to the questions were coded in the database as **9** for *missing* responses and **n** for *not administered*. Scale scores were coded as **999** for missing and **997** for not administered.



**Table 5.3: Definition of the indices and data collected via the student questionnaire**

Description	Name	Question	Variables	Year	Number of items	Response 1	Response 2	Response 3	Response 4
<b>Students' attitudes towards civic and citizenship issues</b>									
The importance of conventional citizenship	IMPCCON	9	P333a-e	Both	5	Very important	Quite important	Not very important	Not important at all
The importance of social movement related citizenship	IMPCSOC	9	P333f-i	Both	4	Very important	Quite important	Not very important	Not important at all
Trust in civic institutions and processes	CIVTRUST	10	P334	Both	6(5) <sup>1</sup>	Completely	Quite a lot	A little	Not at all
Attitudes towards Indigenous culture	ATINCULT	11	P313	Both	5	Strongly Agree	Agree	Disagree	Strongly disagree
Attitudes towards Australian diversity	ATAUSDIF	12	P312	Year 10	7	Strongly Agree	Agree	Disagree	Strongly disagree
<b>Students' engagement in civics and citizenship activities</b>									
Civics and citizenship-related activities at school	No IRT	1	P412	Both	9	Yes	No	This is not available at my school	
Civics and citizenship-related activities in the community	No IRT	2	P411	Year 10	5	Yes, I have done this within the last year	Yes, I have done this but more than a year ago	No, I have never done this	
Media use and participation in discussion of political or social issues	No IRT	3	P413	Both	7	Never or hardly ever	At least once a month	At least once a week	More than three times a week
Civic Interest	CIVINT	6	P331	Both	6	Very interested	Quite interested	Not very interested	Not interested at all
Confidence to engage in civic action	CIVCONF	7	P322	Both	6	Very well	Fairly well	Not very well	Not at all
Beliefs in value of civic action	VALCIV	8	P321	Both	4/5 <sup>2</sup>	Strongly Agree	Agree	Disagree	Strongly disagree
Intentions to promote important issues in	PROMIS	4	P421	Both	8	I would	I would	I would	I would

the future							certainly do this	probably do this	probably not do this	certainly not do this
Student intentions to engage in civic action	CIVACT	5	P422	Year 10	5	I will certainly do this	I will probably do this	I will probably not do this	I will certainly not do this	

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<sup>1</sup> Question f was excluded from the scale

<sup>2</sup> Question e was only used for Year 10

### *Student sample weights*

In addition to students' responses, scaled scores, questionnaire indices and background data, student sampling weights were added to the database. Computation of student weights is described in Chapter 3. In order to compute unbiased standard errors, 161 replication weights were constructed and added to the database. Chapter 8 describes how these replication weights were computed and how they were, and should be, used for computing standard errors.

## CHAPTER 6

### SCALING PROCEDURES

Both cognitive and questionnaire items were scaled using *item response theory* (IRT) scaling methodology. The cognitive items formed one NAP–CC proficiency scale, while a number of different scales were constructed from the questionnaire items. Both cognitive and questionnaire item responses were collected in an online environment in 2013, while they were previously recorded using paper and pencil.

#### The scaling model

Test items were scaled using IRT scaling methodology. Use of the *one-parameter model* (Rasch, 1960) means that in case of dichotomous items, the probability of selecting a correct response (value of one) instead of an incorrect response (value of zero) is modelled as

$$P_i(\theta_n) = \frac{\exp(\theta_n - \delta_i)}{1 + \exp(\theta_n - \delta_i)}$$

where  $P_i(\theta_n)$  is the probability of person  $n$  to score 1 on item  $i$ ,  $\theta_n$  is the estimated ability of person  $n$  and  $\delta_i$  is the estimated location of item  $i$  on this dimension. For each item, responses are modelled as a function of the latent trait  $\theta_n$ .

In the case of items with more than two ( $k$ ) categories (as for example with Likert-type items) the above model can be generalised to the *Rasch partial credit model* (Masters & Wright, 1997), which takes the form of

$$P_{x_i}(\theta_n) = \frac{\exp \sum_{k=0}^x (\theta_n - \delta_i + \tau_{ij})}{\sum_{h=0}^{m_i} \exp \sum_{k=0}^h (\theta_n - \delta_i + \tau_{ij})} \quad x_i = 0, 1, \dots, m_i$$

where  $P_{x_i}(\theta_n)$  denotes the probability of person  $n$  to score  $x$  on item  $i$ ,  $\theta_n$  denotes the person's ability, the item parameter  $\delta_i$  gives the location of the item on the latent continuum and  $\tau_{ij}$  denotes an additional step parameter.

The ACER ConQuest Version 3.0 software (Wu, Adams, Wilson, & Haldane, 2007) was used for the estimation of model parameters.

#### Scaling cognitive items

This section outlines the procedures for analysing and scaling the cognitive test items. They are somewhat different from scaling the questionnaire items, which will be discussed in the subsequent section.

##### Assessment of item fit

The model fit for cognitive test items was assessed using a range of item statistics. The *weighted mean-square statistic* (infit), which is a residual based fit statistic, was used as a global indicator of item fit.

Weighted infit statistics were reviewed both for item and step parameters. The ACER ConQuest Version 3.0 software was used for the analysis of item fit. In addition to this, the software provided item characteristic curves (ICCs). ICCs provide a graphical representation of item fit across the range of student abilities for each item (including dichotomous and partial credit items). The functioning of the partial credit score guides was further analysed by reviewing the proportion of responses in each response category and the correct ordering of mean abilities of students across response categories. The following items were removed from the scale due to poor fit statistics: FT33 (both year levels), RR21 (Year 6), PT22 (Year 6), AF31 (Year 6), SH41 (Year 6), AG01 (Year 10).

There were no strict criteria for removing items from the test. Items were flagged for discussion based on a significant higher infit mean square combined with low discrimination (item-rest correlation of about 0.2 or lower). The item development and data analysis team considered the ICC and the content of the item before a decision was made about removal of the item for scaling.

### *Differential item functioning by gender*

The quality of the items was also explored by assessing differential item functioning (DIF) by gender. Differential item functioning occurs when groups of students with the same ability have different probabilities of responding correctly to an item. For example, if boys have a higher probability than girls with the same ability on an item, the item shows gender DIF in favour of boys. This constitutes a violation of the model, which assumes that the probability is only a function of ability and not of any group membership. DIF results in the advantaging of one group over another group. The item in this example advantages boys. No items were removed due to gender DIF.

### *Item calibration*

Item parameters were calibrated using the full sample. The student weights were rescaled, to ensure that each state or territory was equally represented in the sample. Items were calibrated separately for Year 6 and Year 10.

Missing student responses that were likely to be due to problems with test length (not reached items)<sup>9</sup> were omitted from the calibration of item parameters but were treated as incorrect for the scaling of student responses. All embedded missing responses were included as incorrect responses for the calibration of items.

Appendix C.1 shows the item difficulties on the historical scale with a response probability of 0.62 in logits. It also shows their respective per cent correct for each year sample (equally weighted states and territories). In addition, column three indicates if an item was used as a horizontal link item.

### *Plausible values*

Plausible values methodology was used to generate values for students' civics and citizenship knowledge. Using item parameters anchored at their estimated values from the calibration process, plausible values are random draws from the marginal posterior of the latent distribution (Mislevy, 1991; Mislevy & Sheehan, 1987; von Davier, Gonzalez, & Mislevy, 2009). Here, not reached items were included as incorrect responses, just like the embedded missing responses. Estimations are based on the conditional item response model and the population model, which includes the regression on background and questionnaire variables used for *conditioning* (see a detailed description in Adams, 2002). The ACER ConQuest Version 3.0 software was used for drawing plausible values.

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<sup>9</sup> *Not reached* items were defined as all consecutive missing values at the end of the test except the first missing value of the missing series, which was coded as *embedded missing*, like other items that were presented to the student but not responded to.

A conditioning model was created for each state or territory and year level. The variables school mean performance adjusted for the student’s own performance<sup>10</sup> and dummy variables for the school level variables sector, geographic location of the school, and SEIFA levels were used as direct regressors in the model. All other student background variables and responses to questions in the student questionnaire were re-coded into dummy variables and transformed into components by a principle component analysis (PCA). The principle components were estimated for each state or territory separately. Subsequently, the components that explained 99 per cent of the variance in all the original variables were included as regressors in the conditioning model. Details of the coding of regressors are listed in Appendix C.2.

### Horizontal equating

Both Year 6 and Year 10 items consisted of new and old items. The old items were developed and used in previous cycles and could be used as *link items*. To justify their use as link items, relative difficulties were compared between 2010 and 2013. Forty-four out of 47 old items were used as link items for Year 6. Fifty-eight out of 63 old items were used as link items for Year 10. During the selection process, the average discrimination of the sets of link items was compared across year levels and assessments to ensure that the psychometric properties of link items were stable across the assessment cycles. In addition, the average gender DIF was kept as similar and as close to zero as possible between the two assessments (-0.026 in 2010 and -0.012 in 2013 for Year 6 and -0.004 in 2010 and 0.015 in 2013 for Year 10).

Figure 6.1 and Figure 6.2 show the scatter plots of the item difficulties for the selected link items. In each plot, each dot represents a link item. The average difficulty of each set of link items was set to zero. The dotted line represents the identity line, which is the expected location on both scales. The solid lines form the 95 per cent confidence interval around the expected values. The standard errors were estimated on a self-weighted calibration sample with 300 students per jurisdiction.

*Item-rest correlation* is an index of *item discrimination* which is computed as the correlation between the scored item and the raw score of all other items in a booklet. It indicates how well an item discriminates between high and low performing students. The 2010 and 2013 values of these discrimination indices are presented in Figure 6.3 and Figure 6.4. The average item-rest correlation of the link items for Year 6 was 0.36 in 2010 and 0.38 in 2013. For Year 10, the average item-rest correlation was 0.36 in both 2010 and 2013.

After the selection of link items, *common item equating* was used to shift the 2013 scale onto the historical scale for each year level separately. The value of the shift is the difference in average difficulty of the link items between 2010 and 2013 (-0.063 and -0.208 for Year 6 and Year 10, respectively). After applying these shifts, the same transformation was applied as in 2010 (see Wernert, Gebhardt & Schulz, 2009) for the Year 6 students

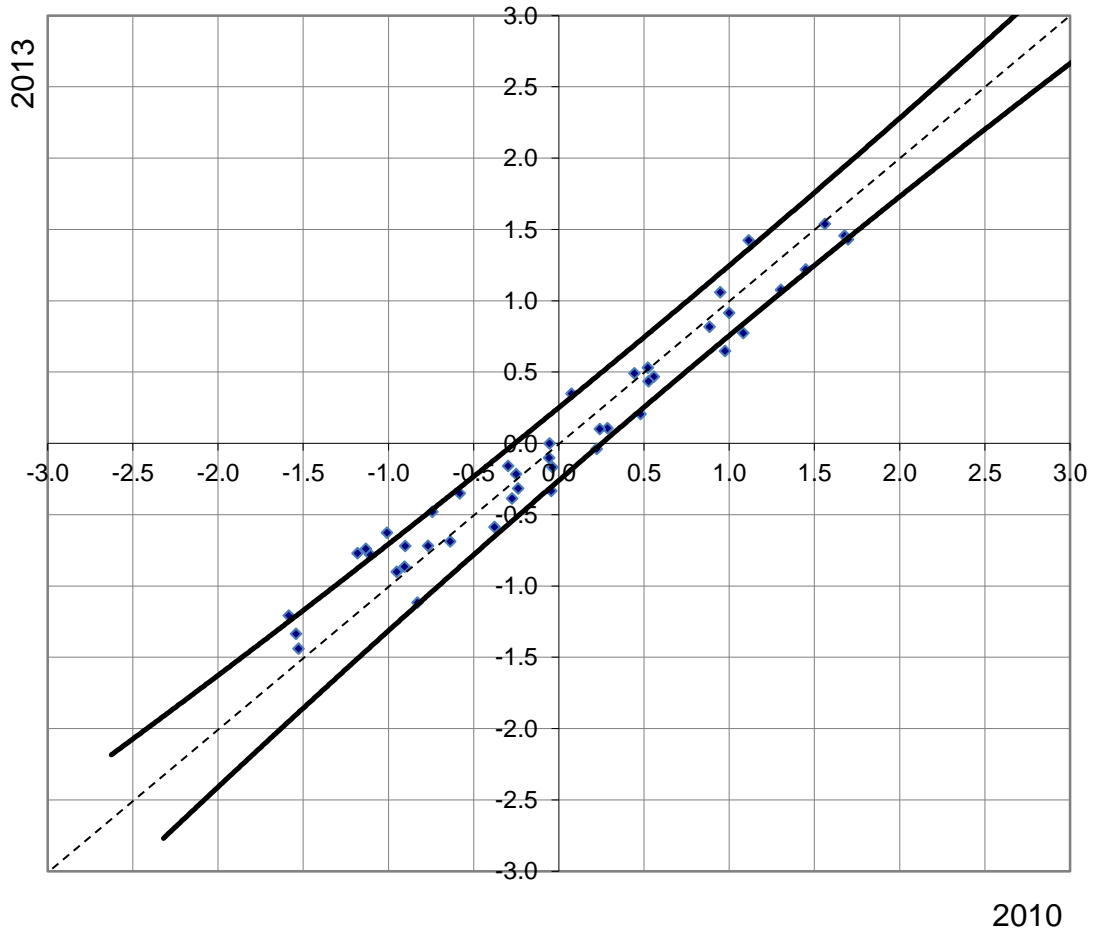
$$\theta_n^* = \left\{ \left( \theta_n - 0.063 - 0.473 - 0.547 - 0.189 - \bar{\theta}_{04} \right) / \sigma_{04} \right\} \times 100 + 400$$

and for the Year 10 students

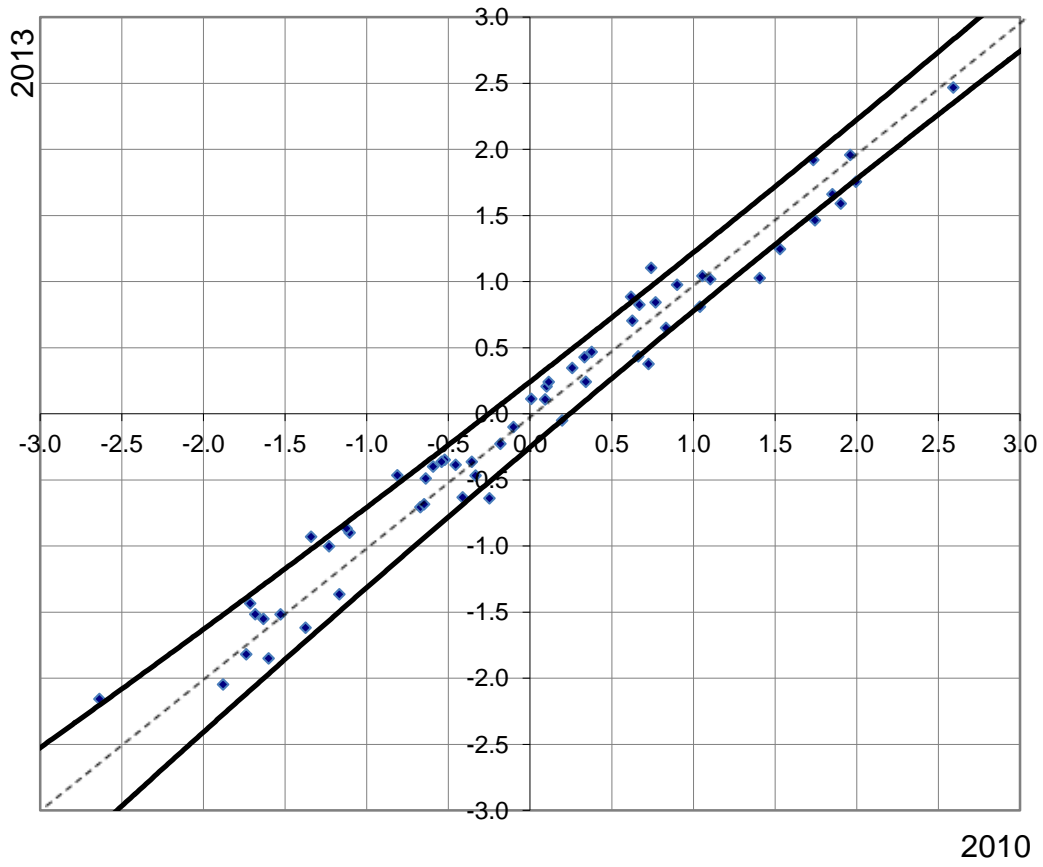
$$\theta_n^* = \left\{ \left( \theta_n - 0.208 - 0.777 - 0.057 + 0.119 - \bar{\theta}_{04} \right) / \sigma_{04} \right\} \times 100 + 400.$$

<sup>10</sup> So called *weighted likelihood estimates* (WLE) were used as ability estimates in this case (Warm, 1989).

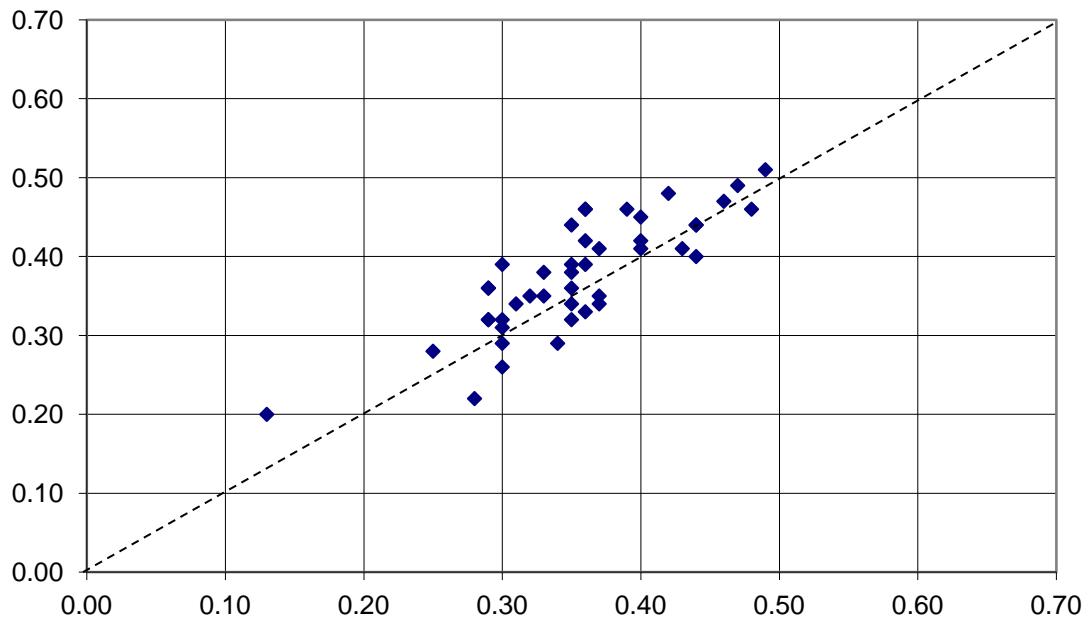
**Figure 6.1: Relative item difficulties in logits of horizontal link items for Year 6 between 2010 and 2013**



**Figure 6.2: Relative item difficulties in logits of horizontal link items for Year 10 between 2010 and 2013**

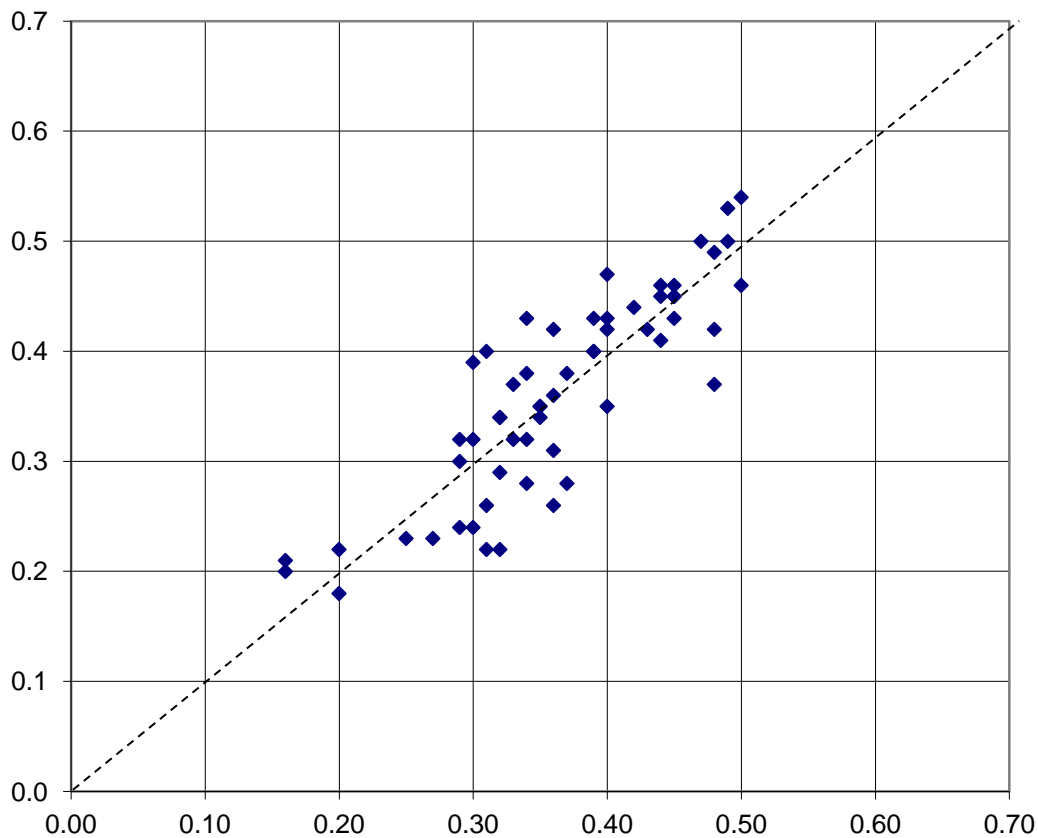


**Figure 6.3: Discrimination of Year 6 link items in 2010 and 2013**





**Figure 6.4: Discrimination of Year 10 link items in 2010 and 2013**



where  $\theta_n^*$  is the transformed knowledge estimate for student  $n$ ,  $\theta_n$  is the original knowledge estimate for student  $n$  in logits,  $\bar{\theta}_{04}$  is the mean ability in logits of the Year 6 students in 2004 (-0.6993) and  $\sigma_{04}$  is the standard deviation in logits of the Year 6 students in 2004 (0.7702).

### Uncertainty in the link

The shift that equates the 2013 data with the 2010 data depends upon the change in difficulty of each of the individual link items. As a consequence, the sample of link items that have been chosen will influence the estimated shift. This means that the resulting shift could be slightly different if an alternative set of link items had been chosen. The consequence is an uncertainty in the shift due to the sampling of the link items, just as there is an uncertainty in values such as state or territory means due to the use of a sample of students.

The uncertainty that results from the selection of a subset of link items is referred to as *linking error* (also called *equating error*) and this error should be taken into account when making comparisons between the results from different data collections across time. Just as with the error that is introduced through the process of sampling students, the exact magnitude of this linking error cannot be determined. We can, however, estimate the likely range of magnitudes for this error and take this error into account when interpreting results. As with sampling errors, the likely range of magnitude for the combined errors is represented as a standard error of each reported statistic.

The estimation of the linking error for trend comparisons between the 2013 and the 2010 assessments was carried out following a method proposed by Monseur and Berezner (2010, see also OECD, 2009a). This method takes both the clustering of items in units and the maximum score of partial credit items into account and is described below.

Suppose one has a total of  $L$  score points in the link items in  $K$  units. Use  $i$  to index items in a unit and  $j$  to index units so that  $\hat{\delta}_{ij}^y$  is the estimated difficulty of item  $i$  in unit  $j$  for year  $y$ , and let

$$c_{ij} = \hat{\delta}_{ij}^{2013} - \hat{\delta}_{ij}^{2010}$$

The size (total number of score points) of unit  $j$  is  $m_j$  so that

$$\sum_{j=1}^K m_j = L \quad \text{and}$$

$$\bar{m} = \frac{1}{K} \sum_{j=1}^K m_j$$

Further let

$$c_{\bullet j} = \frac{1}{m_j} \sum_{i=1}^{m_j} c_{ij} \quad \text{and}$$

$$\bar{c} = \frac{1}{N} \sum_{i=1}^K \sum_{j=1}^{m_j} c_{ij}$$

Then the link error, taking into account the clustering, is as follows

$$error_{2010,2013} = \sqrt{\frac{\sum_{j=1}^K m_j^2 (c_{\bullet j} - \bar{c})^2}{K(K-1)\bar{m}^2}} = \frac{\sum_{j=1}^K m_j^2 (c_{\bullet j} - \bar{c})^2}{L^2} \frac{K}{K-1}$$

Apart from taking the number of link items into account, this method also accounts for partial credit items with a maximum score of more than one and the dependency between items within a unit. The respective equating errors between 2013 and each previous assessment cycle are presented in Table 6.1.

**Table 6.1: Transformation parameters for questionnaire scales**

	With 2013	
	Year 6	Year 10
2010	4.85	4.72
2007	7.17	6.39
2004	8.36	6.77

### Scaling questionnaire items

The questionnaire included items measuring constructs within two broad areas of interest: students’ *attitudes* towards civics and citizenship issues (five scales) and students’ *engagement* in civics and citizenship activities (five scales). The content of the constructs was described in Chapter 5. This section describes the scaling procedures and the psychometric properties of the scales.

Before estimating student scale scores for the questionnaire indices, confirmatory factor analyses were undertaken to evaluate the dimensionality of each set of items. Four questions of the attitudes towards Australian diversity (P312b, c, f and g) had to be reverse coded to make their direction consistent with the other questions of this construct. Factorial analyses largely confirmed the expected dimensional structure of item sets and the resulting scales had satisfactory reliabilities. One item, originally expected to measure *trust in civic institutions and processes* (trust in the media), had relatively low correlations with the other items in this item set and was therefore excluded from scaling.

Table 6.2 shows scale descriptions, scale names and number of items for each derived scale. In addition, the table includes scale reliabilities (Cronbach’s alpha) as well as the correlations with student test scores for each year level.

**Table 6.2: Description of questionnaire scales**

Question	Scale name	Scale label	Items	N items	Scores	Cronbach's alpha		Correlation with achievement	
						Year 6	Year 10	Year 6	Year 10
<i>Students' attitudes towards civic and citizenship issues</i>									
P312	ATAUSDIF	Attitudes towards Australian diversity	a-g	7	0-3		0.80		0.38
P313	ATINCULT	Attitudes towards Australian Indigenous culture	a-e	5	0-3	0.85	0.90	0.30	0.18
P333	IMPCCON	The importance of conventional citizenship	a-e	5	0-3	0.76	0.79	0.06	0.13
P333	IMPCSOC	The importance of social movement related citizenship	f-i	4	0-3	0.80	0.85	0.15	0.16
P334	CIVTRUST	Trust in civic institutions and processes	a-e <sup>1</sup>	5	0-3	0.82	0.86	0.06	0.10
<i>Students' engagement in civic and citizenship activities</i>									
P321	VALCIV	Valuing civic action	a-d(e) <sup>2</sup>	4(5)	0-3	0.70	0.82	0.27	0.22
P322	CIVCONF	Confidence to engage in civic action	a-f	6	0-3	0.84	0.86	0.33	0.39
P331	CIVINT	Civic Interest	a-f	6	0-3	0.81	0.85	0.19	0.32
P411	No scale	Civic-related participation in the community	a-e	5	0-2				
P412	No scale	Civic-related participation at school	a-i	9	0-1				
P421	PROMIS	Intentions to promote important issues in the future	a-h	8	0-3	0.82	0.87	0.16	0.31
P422	CIVACT	Student Intentions to engage in civic action	a-e	5	0-3		0.77		0.14

*Scales only available for Y10 with grey shading.*

<sup>1</sup> One question (f) was excluded from the scale

<sup>2</sup> Four questions for Year 6, five for Year 10

Student and item parameters were estimated using the ACER ConQuest Version 3.0 software. If necessary, items were reverse coded so that a high score on that item reflects a positive attitude. Items were scaled using the Rasch partial credit model (Masters & Wright, 1997). Items were calibrated for Year 6 and Year 10 separately on the full sample, weighting all states and territories equally. Concurrently, students' scale scores were estimated for each individual student with item difficulties anchored at their previously estimated values. Weighted likelihood estimation was used to obtain the individual student scores (Warm, 1989).

When calibrating the item parameters, for each scale the average item difficulty was fixed to zero. Since the items and the scaling parameterization were exactly the same as in 2010, applying the same transformation to the student scores as last cycle equated them to the 2010 scales so that results could be compared. The transformation was as follows

$$\theta_n^* = \left\{ (\theta_n + \text{VertShift} - \bar{\theta}_{2010,Y10}) / \sigma_{2010,Y10} \right\} \times 10 + 50$$

where  $\theta_n^*$  is the transformed student score for student  $n$ ,  $\theta_n$  is the original attitude estimate for student  $n$  in logits,  $\text{VertShift}$  is the vertical equating shift for Year 6 or Year 10 student scores in 2010 where applicable,  $\bar{\theta}_{2010,Y10}$  is the 2010 mean estimate in logits of the Year 10 students and  $\sigma_{2010,Y10}$  is the 2010 standard deviation in logits of the Year 10 students.

**Table 6.3: Transformation parameters for questionnaire scales**

SCALE	Vertical Shift		Mean Year 10	SD Year 10
	Year 6	Year 10		
ATAUSDIF			0.620	1.443
ATINCULT			2.415	2.495
CIVACT			-0.979	1.563
CIVCONF	-0.140	0.022	0.101	1.742
CIVINT			0.280	1.694
CIVTRUST	0.000	-0.134	-0.070	1.915
COMPART			-0.885	1.112
COMSCHL			-0.416	1.405
IMPCCON			0.554	1.631
IMPCSOC			1.027	2.148
PROMIS	0.046	-0.027	-0.148	1.464
VALCIV		0.031	1.408	1.630

Similar to the equating process of the cognitive scale, equating errors need to be applied when comparing results of 2013 with results from 2010. For the questionnaire scales, all items were within the same units and had the same maximum score. Therefore, a more simple formula was used to compute the equating errors. After adjusting the item difficulties by applying the vertical shifts so that the average difficulty of the items in a scale is equal in 2013 and 2010, the following formula was applied

$$EqErr = \frac{SD(d_i)}{\sqrt{N}},$$

where  $d_i$  is the difference between the adjusted difficulties of item  $i$  in 2010 and 2013 and  $N$  is the number of items in each scale. The equating errors are presented in Table 6.4.

**Table 6.4: Equating errors for questionnaire scales**

	Equating Error	
	Year 6	Year 10
ATAUSDIF		0.351
ATINCULT	0.255	0.229
CIVACT		0.559
CIVCONF	0.215	0.162
CIVINT	0.237	0.228
CIVTRUST	0.268	0.677
IMPCCON	0.147	0.197
IMPCSOC	0.141	0.311
PROMIS	0.169	0.396
VALCIV	0.240	0.105

## CHAPTER 7

# PROFICIENCY LEVELS AND THE PROFICIENT STANDARDS

### Introduction

One of the key objectives of NAP–CC is to monitor trends in civics and citizenship performance over time. The NAP–CC scale forms the basis for the empirical comparison of student performance. In addition to the metric established for the scale, a set of proficiency levels with substantive descriptions was established in 2004. These described levels are syntheses of the item contents within each level. In 2004 descriptions for Level 1 to Level 5 were established based on the item contents. In 2007 an additional description of Below Level 1 was derived. Comparison of student achievement against the proficiency levels provides an empirically and substantively convenient way of describing profiles of student achievement.

The proficiency level descriptors have been updated in 2013 to reflect the larger pool of items developed since 2004.

Students whose results are located within a particular level of proficiency are typically able to demonstrate the understandings and skills associated with that level, and also typically possess the understandings and skills defined as applying at lower proficiency levels.

### Proficiency levels

#### *Creating the proficiency levels*

The proficiency levels were established in 2004 and were based on an approach developed for the OECD’s Project for International Student Assessment (PISA). For PISA, a method was developed that ensured that the notion of being at a level could be interpreted consistently and in line with the fact that the achievement scale is a continuum. This method ensured that there was some common understanding about what being at a level meant and that the meaning of being at a level was consistent across levels. Similar to the approach taken in the PISA study (OECD, 2005, p.255) this method takes the following three variables into account:

- the expected success of a student at a particular level on a test containing items at that level;
- the width of the levels in that scale; and
- the probability that a student in the middle of a level would correctly answer an item of average difficulty for that level.

To achieve this for NAP–CC, the following two parameters for defining proficiency levels were adopted by the PMRT:

- setting the response probability for the analysis of data at  $p = 0.62$ ; and
- setting the width of the proficiency levels at 1.00 logit.

With these parameters established, the following statements can be made about the achievement of students relative to the proficiency levels.

- A student whose result places him/her at the lowest possible point of the proficiency level is likely to get approximately 50 per cent correct on a test made up of items spread uniformly across the level, from the easiest to the most difficult.
- A student whose result places him/her at the lowest possible point of the proficiency level is likely to get 62 per cent correct on a test made up of items similar to the easiest items in the level.
- A student at the top of the proficiency level is likely to get 82 per cent correct on a test made up of items similar to the easiest items in the level.

The final step is to establish the position of the proficiency levels on the scale. This was done together with a standards setting exercise in which a Proficient Standard was established for each year level. The Year 6 Proficient Standard was established as the cut-point between Level 1 and Level 2 on the NAP-CC scale and the Year 10 Proficient Standard was established as the cut-point between Level 2 and Level 3.

Clearly, other solutions with different parameters defining the proficiency levels and alternative inferences about the likely per cent correct on tests could also have been chosen. The approach used in PISA, and adopted for NAP-CC, attempted to balance the notions of mastery and ‘pass’ in a way that is likely to be understood by the community.

### *Proficiency level cut points*

Six proficiency levels were established for reporting student performances from the assessment. Table 7.1 identifies these levels by cut-point (in logits and scale score) and shows the percentage of Year 6 and Year 10 students in each level in NAP-CC 2013.

**Table 7.1: Proficiency level cut-points and percentage of Year 6 and Year 10 students in each level in 2013**

Proficiency Level	Cut-points		Percentage	
	Logits	Scale Scores	Year 6	Year 10
Level 5	2.34	795	1(±0.4)*	1(±0.4)
Level 4	1.34	665		9(±1.5)
Level 3	0.34	535	13(±1.6)	35(±2.4)
Level 2	-0.66	405	38(±1.9)	37(±2.3)
Level 1	-1.66	275	33(±2.3)	16(±1.6)
Below Level 1			15(±1.5)	3(±0.8)

\* Levels 4 and 5 for Year 6 are reported together

### *Describing proficiency levels*

To describe the proficiency levels, a combination of experts’ knowledge of the skills required to answer each civics and citizenship item and information from the analysis of students’ responses was utilised.

The proficiency level descriptors were updated in 2013 to reflect the larger pool of items developed since 2004.



Appendix D.1 provides the descriptions of the knowledge and skills required of students at each proficiency level. The descriptions reflect the skills assessed by the full range of civics and citizenship items covering Aspects 1 and 2 of the assessment framework.

## **Setting the proficient standards**

The process for setting standards in areas such as primary science, information and communications technologies, civics and citizenship and secondary (15-year-old) reading, mathematics and science was endorsed by the PMRT at its 6 March 2003 meeting and is described in the paper, *Setting National Standards* (PMRT, 2003).

This process, referred to as the empirical judgemental technique, requires stakeholders to examine the test items and the results from the national assessments and agree on a proficient standard for the two year levels.

The standards for NAP-CC were set in March 2005, following the 2004 assessment. A description of this process is given in the NAP-CC 2004 Technical Report (Wernert, Gebhardt, Murphy and Schulz, 2006).

The cut-point of the Year 6 Proficient Standard was located at -0.66 logits on the 2004 scale. This defined the lower edge of Proficiency Level 2 in Table 7.1. The Year 10 Proficient Standard is located at the lower edge of Proficiency Level 3.

The Proficient Standards for Year 6 and Year 10 civics and citizenship achievement were endorsed by the Key Performance Measures subgroup of the PMRT in 2005.

## CHAPTER 8

### REPORTING OF RESULTS

#### Introduction

Student samples were obtained using two-stage cluster sampling procedures: In the first stage, schools were selected from a sampling frame with a probability proportional to their size, in the second stage intact classrooms were randomly sampled within schools (see Chapter 3 on sampling and weighting). Cluster sampling techniques permit an efficient and economic data collection. However, given that these samples are not simple random samples the usual formulae to obtain standard errors for population estimates are not appropriate.

This chapter describes the methods that were used to compute standard errors for different types of statistics. Subsequently, it outlines the types of statistical analyses and significance tests that were carried for reporting of results in the NAP–CC Years 6 and 10 Report 2013.

#### Computation of sampling and measurement variance

Unbiased standard errors include both sampling and measurement variance. Replication techniques provide tools to estimate the correct sampling variance on population estimates (Wolter, 1985; Gonzalez and Foy, 2000) when subjects were not sampled in a simple random way. For NAP–CC the jackknife repeated replication technique (JRR) was used to compute the sampling variance for population means, differences, percentages and correlation coefficients (see a more detailed description of this method in Schulz, 2011). The other component of the standard error, the measurement variance, can be computed using the variance between the five plausible values.

#### *Replicate weights*

Generally, the JRR method for stratified samples requires the pairing of primary sampling units (PSUs)—here: schools—into pseudo-strata. Assignment of schools to these so-called sampling zones needs to be consistent with the sampling frame from which they were sampled. Sampling zones were constructed within explicit strata and schools were sorted in the same way as in the sampling frame so that adjacent schools were as similar to each other as possible. Subsequently pairs, or sampling zones, were formed of adjacent schools. In the case of an odd number of schools within an explicit stratum or the sampling frame, the remaining school was randomly divided into two halves and added to the schools in the final sampling zone to form pseudo-schools. One hundred and sixty one sampling zones were used for the Year 6 and 158 for the Year 10 data in 2013.

Within each of these sampling zones, one school was randomly assigned a jackknife indicator of two, whereas the other school received a jackknife indicator of zero. For each of the sampling zones a so-called replicate weight variable was computed so that one of the paired schools had a contribution of zero (jackknife indicator is zero) and the other a double contribution (jackknife indicator is two) whereas all other schools remained the same (jackknife indicator is 1). This is achieved by simply multiplying student weights with the jackknife indicators once for each sampling zone. One replicate weight is computed for each sampling zone. The sum of the replicate weights is always equal to the sum of the final student weights.

For each year level sample 161 replicate weights were created. In Year 10, which had fewer sampling zones, the last three replicate weights were equal to the final sampling weight.

### Standard errors

In order to compute the sampling variance for a statistic  $t$ ,  $t$  is estimated once for the original sample  $S$  and then for each of the jackknife replicates  $J_h$ . The JRR variance is computed using the formula

$$Var_{jrr}(t) = \sum_{h=1}^H [t(J_h) - t(S)]^2$$

where  $H$  is the number of sampling zones,  $t(S)$  the statistic  $t$  estimated for the population using the final sampling weights,  $t(J_h)$  the same statistic estimated using the weights for the  $h^{\text{th}}$  jackknife replicate. When the measurement error cannot be estimated, i.e. student scores are not plausible values, then the standard error for  $t$  is

$$\sigma(t) = \sqrt{Var_{jrr}(t)}$$

The computation of JRR variance can be obtained for any statistic. Standard statistical software does generally not include any procedures for replication techniques. For NAP – CC, specialist software, the SPSS® replicates add-in, was used to run macros which are described and provided in the *PISA Data Analysis Manual SPSS®, Second Edition* (OECD, 2009) to estimate sampling variance using jackknife replication methods for means and percentages.

Population statistics on civics and citizenship achievement from NAP – CC 2013 data were always estimated using all five plausible values. If  $\theta$  is any computed statistic and  $\theta_i$  is the statistic of interest computed on one plausible value, then:

$$\theta = \frac{1}{M} \sum_{i=1}^M \theta_i$$

with  $M$  being the number of plausible values.

The sampling variance  $U$  is calculated as the average of the sampling variance for each plausible value  $U_i$ :

$$U = \frac{1}{M} \sum_{i=1}^M U_i$$

Using five plausible values for data analysis also allows the estimation of the amount of error associated with the measurement of civics and citizenship ability due to the lack of precision of the test. The measurement variance or imputation variance  $B_M$  was computed as:

$$B_M = \frac{1}{M-1} \sum_{i=1}^M (\theta_i - \theta)^2$$

The sampling variance and measurement variance were combined in the following way to compute the standard error (SE):

$$SE = \sqrt{U + \left(1 + \frac{1}{M}\right) B_m},$$

with U being the sampling variance. The 95 per cent confidence interval, as presented in the National Assessment Program – Civics and Citizenship Years 6 and 10 Report 2013, is given by the range between the value of the statistic minus 1.96 times the standard error to the value of the statistic plus 1.96 times the standard error.

## Reporting of mean differences

The NAP–CC Years 6 and 10 Report 2013 included comparisons of assessment results across states and territories, that is, means of scales and percentages were compared in graphs and tables. Each population estimate was accompanied by its 95 per cent confidence interval. In addition, tests of significance for the difference between estimates were provided, in order to describe the probability that differences were just a result of sampling and measurement error.

The following types of significance tests for mean differences in population estimates were reported:

- Differences between states and territories;
- Differences between student background subgroups; and
- Differences between assessment cycles 2004, 2007, 2010 and 2013.

### *Mean differences between states and territories and year levels*

Pair wise comparison charts allow the comparison of population estimates between one state or territory and another or between Year 6 and Year 10. Differences in means were considered significant when the test statistic  $t$  was outside the critical values  $\pm 1.96$  ( $\alpha = 0.05$ ). The  $t$  value is calculated by dividing the difference in means by its standard error that is given by the formula:

$$SE_{dif\_ij} = \sqrt{SE_i^2 + SE_j^2}$$

where  $SE_{dif\_ij}$  is the standard error on the difference and  $SE_i$  and  $SE_j$  are the standard errors of the compared means  $i$  and  $j$ . The standard error on a difference can only be computed with this formula if the comparison is between two independent samples like states and territories or year levels. Samples are considered independent if they are drawn separately as was the case at the level of jurisdictions.

### *Mean differences between dependent subgroups*

In case of dependent subgroups whose members were selected as part of the same sample, the covariance between the two standard errors needs to be taken into account. While subgroups like state or territory and year level constitute independent sub-samples, most sub-groups in the sample like gender, language background and country of birth are not sampled independently from each other. To obtain correct standard errors for differences between statistics for these subgroups of interest, standard errors on the difference were derived using the SPSS® replicates

add-in described above. Differences between subgroups were considered significant when the test statistic  $t$  was outside the critical values  $\pm 1.96$  ( $\alpha = 0.05$ ). The value  $t$  was calculated by dividing the difference between averages by its respective standard error.

### *Mean differences between assessment cycles 2004, 2007, 2010 and 2013*

The NAP–CC Years 6 and 10 Report 2013 also included comparisons of assessment results with those from previous cycles. As the process of equating the tests across the cycles introduces some additional error into the calculation of any test statistic, an equating error term was added to the formula for the standard error of the difference (between cycle means, for example). Chapter 6 describes how equating errors were estimated.

When testing the difference of a statistic between the two assessments, the standard error on the difference is computed as follows:

$$SE(t_{13} - t_{10}) = \sqrt{SE_{13}^2 + SE_{10}^2 + EqErr_{13-10}^2}$$

where  $t$  can be any statistic in units on the civics and citizenship scale (mean, percentile, gender difference, but not percentages) and  $SE$  is the respective standard error on this statistic.

When comparing population estimates between 2013 and the assessment in 2007, two equating errors (between 2013 and 2010 and between 2010 and 2007) had to be taken into account. This was achieved by applying the following formula for the calculation of the standard error for differences between statistics from 2013 and 2007:

$$SE(\mu_{13} - \mu_{07}) = \sqrt{SE_{13}^2 + SE_{07}^2 + EqErr_{13,07}^2}$$

where  $EqErr_{13,07}^2$  reflects the uncertainty associated with the equating between the assessment cycles of 2013 and 2010 (5.28 score points for Year 6 and for Year 10) as well as between 2010 and 2007 (4.31 score points for Year 6 and 2.23 for Year 10). This combined equating error was equal to 7.17 score points for Year 6 and 6.39 score points for Year 10, and was calculated as

$$EqErr_{13,07} = \sqrt{EqErr_{13,10}^2 + EqErr_{10,07}^2}$$

Similarly, for comparisons between 2013 and the first NAP–CC assessment in 2004, the equating errors between each adjacent pair of assessments had to be taken into account and standard errors for differences were computed as

$$SE(\mu_{13} - \mu_{04}) = \sqrt{SE_{13}^2 + SE_{04}^2 + EqErr_{13,04}^2}$$

Here,  $EqErr_{13,04}^2$  reflects the uncertainty associated with the equating between the assessment cycles of 2013 and 2010 (4.85 score points for Year 6 and 4.72 for Year 10), between 2010 and 2007 (5.28 score points for Year 6 and 4.31 for Year 10) as well as between 2007 and 2004 (4.31 score points for Year 6 and 2.23 for Year 10). This combined equating error was equal to 8.36 score points for Year 6 and 6.77 score points for Year 10, and was calculated as

$$EqErr_{13_{07}} = \sqrt{EqErr_{13_{10}}^2 + EqErr_{10_{07}}^2 + EqErr_{07_{04}}^2}$$

To report the significance of differences between percentages at or above Proficient Standards, the equating error for each year level could not directly be applied. Therefore, the following replication method was applied to estimate the equating error for percentages at Proficient Standards.

For each year level cut-point that defines the corresponding Proficient Standard (405 for Year 6 and 535 for Year 10), a number of  $n$  replicate cut-points were generated by adding a random error component with a mean of 0 and a standard deviation equal to the estimated equating error (4.85 for Year 6 and 4.72 for Year 10). Percentages of students at or above each replicate cut-point ( $\rho_n$ ) were computed and an equating error for each year level was estimated as

$$EquErr(\rho) = \sqrt{\frac{(\rho_n - \rho_o)^2}{n}}$$

where  $\rho_o$  is the percentage of students at or above the (reported) Proficient Standard. The standard errors for the differences between percentages at or above Proficient Standards were calculated as:

$$SE(\rho_{10} - \rho_{07}) = \sqrt{SE(\rho_{10})^2 + SE(\rho_{07})^2 + EqErr(\rho)^2}$$

## Other statistical analyses

While most tables in the NAP–CC Years 6 and 10 Report 2013 present means and mean differences, some other statistical analyses were carried out as well.

### Percentiles

Percentiles were presented in order to demonstrate the spread of scores around the mean. In most cases they were presented graphically, and presented the 5th, 10th, 25th, 75th, 90th and 95th percentiles. Appendix E.1 presents, in tabular form, the scale scores that these percentiles represent, for Australia and all states and territories.

### Correlations

Analyses were conducted to investigate associations between variables measuring student participation in different civics and citizenship-related activities. The Pearson product-moment correlation coefficient,  $r$ , was used as the measure of correlation. The SPSS® replicates add-in was used to compute the correlation coefficients and their standard errors.

### Tertile groups

In addition to the usually reported means and differences in mean scores of subgroups mentioned in the previous section, subgroups of students were created based on their scores on attitude scales. For NAP–CC 2013, three groups of equal size representing students with the lowest scores, middle scores and highest scores (the so-called tertile groups) on each attitude scale were formed and compared on their civics and citizenship achievement. Standard errors on the difference between two tertile groups need to be computed the same way as a standard error on a

mean difference between two dependent sub-samples (for example males and females). The SPSS® replicates add-in was used to compute the standard errors.

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## APPENDICES

## Appendix A.1: School resource questions for each participating school

### School Resources

1. Does your school have at least 10 co-located computers which can be used for this assessment?

Yes       No

2. What is the operating system on these computers?

Mac       Windows

3. Do these computers have one of the following web browsers installed?

- Internet Explorer 8 (Windows Vista, 7)
- Chrome 21 (Windows XP)
- Firefox 15+
- Safari

Yes       No

4. Is the screen resolution on these computers 1024 x 768 or greater?

Yes       No

Please use the box below for any additional comments you feel are necessary.

*Screenshot of school resources section of NAP-CC School Administration website*

## Appendix A.2: Student Questionnaires: Year 6 and Year 10

### STUDENT QUESTIONNAIRE

In this section you will find questions about activities you do at school and outside of school, about yourself, and your views on issues related to Australian society.

Please read each question carefully and answer as accurately as you can.

You may ask for help if you do not understand something or are not sure how to answer a question.

If you make a mistake when answering a question, erase your error and make the correction by colouring in the correct bubble.

**In this section, there are no 'right' or 'wrong' answers. Your answers should be the ones that you decide are best for you.**

**Q1** At this school, I ...

(Please colour in **only one bubble** in each row)

	Yes	No	This is not available at my school
a) have voted for class representatives.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) have been elected on to a Student Council, Student Representative Council (SRC) or class/school parliament.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) have helped to make decisions about how the school is run.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) have helped prepare a school paper or magazine.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) have participated in peer support, 'buddy' or mentoring programs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) have participated in activities in the community.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g) have represented the school in activities outside of class (such as drama, sport, music or debating).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h) have been a candidate in a Student Council, Student Representative Council (SRC) or class/school parliament election.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i) have participated in an excursion to a parliament, local government or law court.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q2** Outside of school have you ever participated in activities associated with each of the following?

(Please colour in **only one bubble** in each row)

	<b>Yes, I have done this <u>within the</u> <u>last year</u></b>	<b>Yes, I have done this but <u>more than a</u> <u>year ago</u></b>	<b>No, I have never done this</b>
a) An environmental organisation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) A human rights organisation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) A voluntary group doing something to help the community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) Collecting money for a charity or social cause	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) A youth development organisation (e.g. Scouts, Australian Services Cadets, Police and Community Youth Clubs)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q3** Outside of school, how often do you ...

(Please colour in **only one bubble** in each row)

	<b>Never or hardly ever</b>	<b>At least once a month</b>	<b>At least once a week</b>	<b>More than three times a week</b>
a) read about current events in the newspaper?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) watch the news on television?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) listen to news on the radio?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) use the internet to get news of current events?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) talk about political or social issues with your family?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) talk about political or social issues with your friends?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g) take part in internet-based discussions about political or social issues?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q4** There are many different ways to express your opinions about important issues.

Would you do any of the following in the future?

(Please colour in **only one bubble** in each row)

	<b>I would certainly do this</b>	<b>I would probably do this</b>	<b>I would probably <u>not</u> do this</b>	<b>I would certainly <u>not</u> do this</b>
a) Write a letter or an email to a newspaper	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Wear a badge, hat or t-shirt expressing your opinion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Contact a member of parliament or local council	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) Take part in a peaceful march or rally	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) Collect signatures for a petition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) Choose <u>not</u> to buy certain products or brands of product as a protest	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g) Sign an online petition	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h) Write your opinion about an issue on the internet (e.g. on a blog or web-forum)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q5** There are many different ways people can participate in the community.

Which of the following will you do in the future?

(Please colour in **only one bubble** in each row)

	<b>I will certainly do this</b>	<b>I will probably do this</b>	<b>I will probably <u>not</u> do this</b>	<b>I will certainly <u>not</u> do this</b>
a) Find information about candidates before voting in an election	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Help a candidate or party during an election campaign	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Join a political party	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) Join a trade or other union	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) Stand as a candidate in local council or shire elections	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q6** How interested are you in the following?

(Please colour in **only one bubble** in each row)

	<b>Very interested</b>	<b>Quite interested</b>	<b>Not very interested</b>	<b>Not interested at all</b>
a) What is happening in your local community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Australian politics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Social issues in Australia	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) Environmental issues in Australia	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) What is happening in other countries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) Global (worldwide) issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q7** How well do you think you could do each of the following?

(Please colour in **only one bubble** in each row)

	<b>Very well</b>	<b>Fairly well</b>	<b>Not very well</b>	<b>Not at all</b>
a) Discuss news about a conflict between countries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Argue your opinion about a political or social issue	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Be a candidate in a school or class election	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) Organise a group of students in order to achieve changes at school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) Write a letter or an email to a newspaper giving your view on a current issue	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) Give a speech to your class about a social or political issue	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q8** How much do you agree or disagree with each of the following statements?

(Please colour in **only one bubble** in each row)

	<b>Strongly agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly disagree</b>
a) If students act together at school they can make real change happen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Elected student representatives (such as student council or SRC members) contribute to school decision making.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Student participation in how schools are run can make schools better.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) Organising groups of students to express their opinions could help solve problems in schools.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) Citizens can have strong influence on government policies in Australia.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



**Q9** How important do you think the following are for being a good citizen in Australia?

(Please colour in **only one bubble** in each row)

	<b>Very important</b>	<b>Quite important</b>	<b>Not very important</b>	<b>Not important at all</b>
a) Supporting a political party	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Learning about Australia's history	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Learning about political issues in the newspaper, on the radio, on TV or on the internet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) Learning about what happens in other countries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) Discussing politics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) Participating in peaceful protests about important issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g) Participating in activities to benefit the local community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h) Taking part in activities promoting human rights	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i) Taking part in activities to protect the environment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q10** How much do you trust each of the following groups or institutions in Australia?

(Please colour in **only one bubble** in each row)

	<b>Completely</b>	<b>Quite a lot</b>	<b>A little</b>	<b>Not at all</b>
a) The Australian Parliament	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Your state or territory parliament	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Law courts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) The police	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) Australian political parties	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) The media (i.e. television, newspapers, radio)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q11** How much do you agree or disagree with the following statements about Indigenous Australians?

(Please colour in **only one bubble** in each row)

	<b>Strongly agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly disagree</b>
a) Australia should support the cultural traditions and languages of Indigenous Australians.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) Australia has a responsibility to improve the quality of life of Indigenous Australians.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) It is important to recognise the traditional ownership of land by Indigenous Australians.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) All Australians have much to learn from Indigenous Australian cultures and traditions and people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) All Australians should be given the chance to learn about reconciliation between Indigenous and other Australians.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q12** How much do you agree or disagree with the following statements about Australian society?

(Please colour in **only one bubble** in each row)

	<b>Strongly agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly disagree</b>
a) Immigrants should be encouraged to keep their cultural traditions and languages.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) When there are not many jobs available immigration should be cut.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) Australia will become less peaceful as more people from different backgrounds come to live here.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) Australia benefits greatly from having people from many cultures and backgrounds.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e) All Australians should learn about different cultures and traditions at school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f) Having people from many different cultures and backgrounds makes it difficult for a country to be united.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g) Australia would be a better place in the future if only people with similar backgrounds were allowed to come and live here.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Appendix A.3: Sample screenshots of items in the test delivery system

The screenshot shows a test interface with a top navigation bar containing a 'Flag item' button, a progress indicator with four numbered tabs (1, 2, 3, 4), and a 'Summary' button. The main content area displays 'Question 1' with the text 'In Australia, who must obey the law?' and four radio button options: 'everybody', 'only Australian citizens', 'everybody except members of parliament', and 'only the people who voted for the government'. A 'Next »' button is located at the bottom right. In the bottom left corner, there is a 'Progress' label and a small progress bar.

*Practice question 1*

The screenshot shows a test interface with a top navigation bar containing a 'Flag item' button, a progress indicator with four numbered tabs (1, 2, 3, 4), and a 'Summary' button. The main content area displays 'Question 2' with the text 'Below are two statements about Australia. Decide whether you think each statement is true or false. Indicate your answer by clicking on 'True' or 'False'.' Below this, there are two statements, each with two radio button options labeled 'True' and 'False': 'Hobart is the capital city of Australia.' and 'Australians must carry a passport when travelling overseas.' A '« Previous' button is located at the bottom left, and a 'Next »' button is at the bottom right. In the bottom left corner, there is a 'Progress' label and a small progress bar.

*Practice question 2*

Flag item

1 2 3 4

Summary

Below is a letter to a local newspaper.  
Read the letter and answer the practice question.

Dear Editor,  
Your article on my neighbour pulling down part of my fence. He did not even ask me and now my chickens keep escaping. He refused to speak to me about the fence. I have telephoned the council but they haven't helped.  
Ms C Finch

**Question 3**  
What is the first thing the neighbour should have done before pulling down the fence?

- telephoned the local council
- built a cage for Ms Finch's chickens
- told Ms Finch that he was going to pull down the fence
- asked for Ms Finch's permission to pull down the fence

Progress

« Previous

Show resource

Next »

*Practice question 3*

## Appendix B.1: Technical Readiness Test (TRT) Instructions

### Technical Readiness Test Instructions

It is imperative that you perform Tasks 1 and 2 on the computers that students will use on assessment day.

#### Task 1 – Simple Connectivity Test

Perform this test on all computer devices that students will use for the assessment, <u>except</u> for the last one. This final device is kept for the comprehensive test.	
<b>Step 1</b>	Enter the Technical Readiness Test website address into your browser: <a href="http://trt.cc.nap.edu.au">http://trt.cc.nap.edu.au</a>
<b>Step 2</b>	Enter your Username and Password (as provided in the email), and select <b>Login</b>
<b>Step 3</b>	From the Dashboard, select the <b>Questionnaire</b> (third tile, right of page). Check that the pop-up warning box displays. Select <b>OK</b>
<b>Step 4</b>	From the Dashboard, select <b>Logout</b> (dropdown menu, top right of page)
<b>Step 5</b>	Repeat the above steps for the remaining devices, except the last one.

#### Task 2 – Comprehensive Test (Connectivity and Display)

Perform this test on the <b>final</b> device that a student will use for the assessment.	
<b>Step 1</b>	Enter the Technical Readiness Test website address into your browser: <a href="http://trt.cc.nap.edu.au">http://trt.cc.nap.edu.au</a>
<b>Step 2</b>	Enter your Username and Password (as provided in the email), and select <b>Login</b>
<b>Step 3</b>	From the Dashboard, select <b>Practice Questions</b>
<b>Step 4</b>	Complete all Practice questions. Continue to the Summary page.
<b>Step 5</b>	Select <b>Finish and Exit</b> then <b>OK</b>
<b>Step 6</b>	From the Dashboard, select <b>Test</b>
<b>Step 7</b>	Answer all test questions. For a question with a resource: <ul style="list-style-type: none"><li>• select <b>Show resource</b> to expand an image or text</li><li>• select <b>Hide resource</b> to return to the question.</li></ul> <b>Important:</b> Ensure the resource is displaying correctly (i.e. ensure it is not blank or displaying an error message). Continue to the Summary page, select <b>Finish and Exit</b> . Select <b>Yes</b> then <b>OK</b> .

<b>Step 8</b>	From the Dashboard, select <b>Questionnaire</b>
<b>Step 9</b>	Answer all Questionnaire questions. Continue to the Summary page. Select <b>Finish and Exit</b> then <b>Yes</b>
<b>Step 10</b>	Select <b>Logout</b> (dropdown menu, top right of page)

### Task 3 – Feedback Survey

Please click on the Task 3 Survey URL link (provided in the 2<sup>nd</sup> email sent to you) and complete the short feedback questionnaire about your experiences in undertaking Tasks 1 and 2.

### Technical Requirements and Supported Configurations

Hardware	Operating System	Web Browser for Student access
<ul style="list-style-type: none"> <li>Laptop/PC (iPads not supported)</li> <li>Mouse</li> </ul>	<ul style="list-style-type: none"> <li>Mac OS X</li> <li>MS Windows XP, Vista and 7</li> </ul>	<ul style="list-style-type: none"> <li>Internet Explorer 9 (Vista, 7)</li> <li>Internet Explorer 8 (XP, Vista)</li> <li>Internet Explorer 7 (XP)</li> <li>Chrome 21+ (XP, Vista, 7, OSX)</li> <li>Firefox 15+ (XP, Vista, 7, OSX)</li> <li>Safari (XP, Vista, 7, OSX)</li> </ul>
<b>Settings</b>		
1024 x 768 monitor resolution (screen design has been optimised for this recommended minimum) Browsers run JavaScript Bandwidth to internet (for the school): 512 KB bandwidth recommended minimum for up to 20 users		

### Helpdesk Information

If you require assistance, please contact the NAP–CC Project Team at ACER:

**NAP–CC Assessment Information Line:** 1800 762 022  
**NAP–CC Assessment email:** [nap-cc@acer.edu.au](mailto:nap-cc@acer.edu.au)

## Appendix B.2: School Report Instructional Guide

# NAP–Civics and Citizenship Main Study 2013

## School and Student Reports

### Step-by-Step Instructional Guide

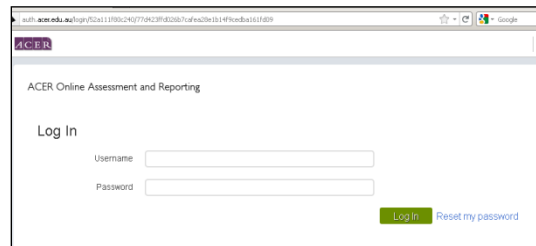
#### Accessing the reports page

1. Navigate to the school reports webpage for the required year level (i.e. either Year 6 or Year 10):

Year 6 reports: <http://schools.acer.edu.au/nap-cc-2013-year-6>

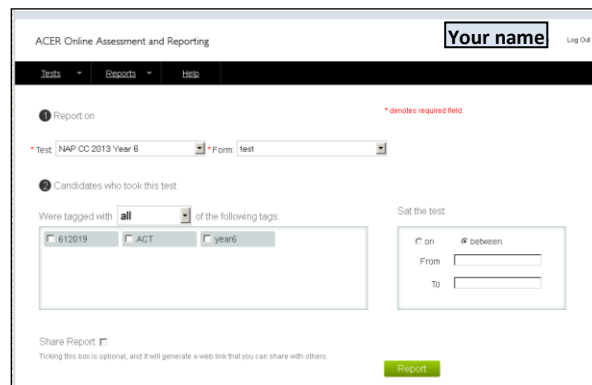
Year 10 reports: <http://schools.acer.edu.au/nap-cc-2013-year-10>

2. Click on the green 'Log in' button. Enter your username and password, and then click on the green 'Log in' button again. Please note: your designated username and password are provided in the email to which these instructions were attached.



*Login page*

3. Click on the green 'Report' button. (You can ignore the other text and check boxes on this page).



*Report Confirmation page*





iii. Green (1... 3): The student correctly (or partially correctly) answered the question. The number refers to the score the student received for their answer to the question. This can be compared to the Max Score for that question.

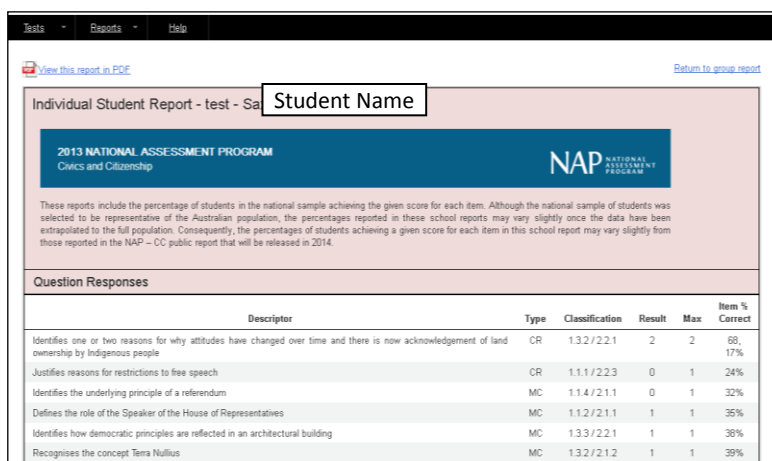
iv. Red (N): The question was in the test booklet for that student, but the student did not provide a response to the question.

The report has a set of clickable sorting features, so you can, for example, view students grouped by gender, or questions grouped by question type.

You can also export the report in MS Excel or PDF format by clicking on the appropriate icon next to the 'Export' heading on the left hand side of the screen.

### **Viewing an individual student report**

1. Click on the name of a student to see the individual report for that student.



Individual Student Report - test - Sa Student Name

2013 NATIONAL ASSESSMENT PROGRAM  
Civics and Citizenship

These reports include the percentage of students in the national sample achieving the given score for each item. Although the national sample of students was selected to be representative of the Australian population, the percentages reported in these school reports may vary slightly once the data have been extrapolated to the full population. Consequently, the percentages of students achieving a given score for each item in this school report may vary slightly from those reported in the NAP – CC public report that will be released in 2014.

Descriptor	Type	Classification	Result	Max	Item % Correct
Identifies one or two reasons for why attitudes have changed over time and there is now acknowledgement of land ownership by Indigenous people	CR	1.3.2/2.2.1	2	2	68, 17%
Justifies reasons for restrictions to free speech	CR	1.1.1/2.2.3	0	1	24%
Identifies the underlying principle of a referendum	MC	1.1.4/2.1.1	0	1	32%
Defines the role of the Speaker of the House of Representatives	MC	1.1.2/2.1.1	1	1	35%
Identifies how democratic principles are reflected in an architectural building	MC	1.3.3/2.2.1	1	1	38%
Recognises the concept Terra Nullius	MC	1.3.2/2.1.2	1	1	39%

*Student Report*

2. The individual student report contains the same student and item information shown in the school report (as described in the previous section). However, the student report shows the question and performance information only for those questions in the test booklet presented to that individual student.

### **Logging out**

At any time you can log out of the reporting system by clicking on the 'Log Out' link at the top right of the screen.

### **Need Help?**

If you require any assistance with accessing the reports for your school, or have any questions about the NAP–CC Main Study assessment in general, please contact the ACER Helpdesk on 1800 762 022 or [nap-cc@acer.edu.au](mailto:nap-cc@acer.edu.au)

## Appendix C.1: Item difficulties and per cent correct for each year level

Year 6					
	Item	Link	RP62	Scaled	Correct
1	AD0231	No	0.940	448	52
2	AD0235	No	0.653	410	58
3	AF32	No	1.362	502	43
4	AF33	Yes	0.713	418	57
5	AF34	Yes	1.903	573	32
6	AJ31	Yes	-0.353	280	76
7	AP21	Yes	-0.535	256	80
8	AP31	Yes	0.014	328	71
9	AP32	Yes	-0.114	311	73
10	AP33	Yes	1.280	492	45
11	AP34	Yes	1.442	513	42
12	AP41	No	0.276	362	65
13	AT42	No	0.655	411	58
14	AT43	No	1.663	542	38
15	BA41	No	-0.293	288	77
16	BI41	No	2.438	642	23
17	BI42	No	-0.270	291	75
18	BI43	No	0.627	407	59
19	BI44	No	1.576	530	40
20	CG31	No	0.044	331	70
21	CN41	No	1.966	581	32
22	CV32	Yes	0.150	345	68
23	DB21	No	1.224	485	45
24	DR0231	No	1.911	574	32
25	DR0232	No	1.887	571	33
26	DS41	No	-1.119	180	87
27	DS42	No	0.006	326	69
28	EQ41	No	-1.604	117	92
29	ER31	Yes	-0.355	280	77
30	ER32	Yes	0.472	387	62
31	FD41	No	0.298	364	63
32	FL14	Yes	1.821	562	34
33	FL17	No	1.526	524	43
34	FL18	Yes	-0.222	297	75
35	FO11a	No	2.748	682	17
36	FS41	No	-0.603	247	81
37	FT31	Yes	0.263	360	67
38	FT32	Yes	0.857	437	54
39	FT33	No	1.501	521	41
40	FW41	No	2.095	598	29
41	FW42	No	-0.785	224	84

Year 6					
	Item	Link	RP62	Scaled	Correct
42	GC33	Yes	0.895	442	52
43	GC34	Yes	0.327	368	65
44	GS31	Yes	0.571	400	59
45	GS32	Yes	-0.752	228	82
46	GS33	Yes	0.031	330	70
47	HS21	Yes	1.183	479	47
48	HS41	No	1.104	469	48
49	HW31	Yes	-0.322	284	77
50	HW32	Yes	-0.261	292	76
51	HW33	Yes	-0.414	272	79
52	IL11	Yes	1.013	457	50
53	IM41	No	0.869	438	53
54	JB41	No	0.117	341	68
55	JB42	No	1.409	509	43
56	LC41	No	0.610	405	61
57	LC42	No	1.287	493	46
58	LC43	No	0.422	380	64
59	LC44	No	1.239	487	47
60	LG0231	No	0.750	423	56
61	LG0233	No	-0.010	324	72
62	MA0231	No	-0.016	324	71
63	MA0232	No	0.744	422	57
64	MA0233	No	-0.242	294	74
65	MA0234	No	-0.322	284	76
66	MA0235	No	0.920	445	53
67	PM41	No	0.797	429	54
68	PO41	No	-0.417	272	77
69	PO42	No	0.527	394	61
70	PROT31a	No	-0.225	296	74
71	PROT32	No	-0.163	304	74
72	PROT33	No	1.272	491	47
73	PT21	Yes	-0.406	273	78
74	PT23	Yes	1.138	473	46
75	PT24	Yes	1.424	511	40
76	RA41	No	-0.453	267	77
77	RA42	No	-0.281	289	75
78	RA43	No	0.279	362	65
79	RF41	No	2.375	634	24
80	RI41	No	-1.219	167	88
81	RM01	No	0.733	421	57
82	RR0332	No	0.061	334	70
83	RR22	Yes	0.206	352	67

Year 6					
	Item	Link	RP62	Scaled	Correct
84	RR23	Yes	0.466	386	60
85	SH21	Yes	1.788	558	37
86	SL41	No	0.414	379	62
87	SL43	No	0.878	440	54
88	SL44	No	-0.511	259	79
89	SU31	Yes	-1.074	186	86
90	SU32	Yes	0.832	434	55
91	SU33	Yes	-0.499	261	80
92	SU34	No	-0.209	299	76
93	TE31	Yes	0.049	332	69
94	TE32	Yes	1.796	559	40
95	TE33	Yes	0.198	351	67
96	TS41	No	0.758	424	56
97	TS42	No	0.791	428	54
98	TS43	No	-0.168	304	74
99	UN31	Yes	0.364	373	63
100	VM21	Yes	-0.971	200	85
101	VO41	No	-0.658	240	81
102	WC42	No	0.466	386	62
103	WC43	No	1.538	525	39
104	WH31	Yes	0.800	430	55
105	WH32	Yes	1.585	531	39
106	WH33	Yes	-0.021	323	71
107	WH34	Yes	-0.374	277	77
108	WH35	Yes	-0.842	216	84
109	WL41	No	0.705	417	56
110	WL43	No	0.886	441	52

Year 10					
	Item	Link	RP62	Scaled	Correct
1	AA31	Yes	1.452	559	51
2	AA32	Yes	0.509	437	71
3	AA33	No	0.290	409	74
4	AC0231	No	1.196	526	57
5	AC32	Yes	0.381	420	71
6	AF31	Yes	0.718	464	66
7	AF32	Yes	1.418	555	50
8	AF33	Yes	0.144	390	76
9	AF34	Yes	1.713	593	46
10	AP31	Yes	-0.290	333	82
11	AP32	Yes	-0.942	249	90
12	AP33	Yes	0.956	495	63

Year 10					
	Item	Link	RP62	Scaled	Correct
13	AP34	Yes	0.985	499	61
14	AZ11	Yes	1.651	585	46
15	AZ12	No	2.002	631	43
16	BA41	No	-0.754	273	88
17	BD41	No	0.726	465	67
18	BG41	No	1.269	536	56
19	BI41	No	1.810	606	43
20	BI42	No	-1.088	230	90
21	BI43	No	0.281	407	75
22	BI44	No	0.739	467	65
23	BS41	No	0.937	493	61
24	CM41	No	-0.939	249	89
25	CM43	No	0.595	448	67
26	CM44	No	-0.170	349	80
27	CN41	No	1.597	578	48
28	DB21	No	0.385	421	69
29	DM21	No	2.413	684	33
30	DR41	No	0.278	407	73
31	DR42	No	-0.066	362	80
32	ER31	Yes	-0.909	253	89
33	ER32	Yes	-1.009	240	90
34	ER33	Yes	-0.393	320	84
35	FD11	Yes	1.076	511	58
36	FD12	Yes	1.627	582	46
37	FD13	No	2.848	741	27
38	FD14	Yes	2.567	704	28
39	FG41	No	0.442	428	70
40	FL14	Yes	1.493	565	50
41	FL17	Yes	0.851	481	60
42	FL18	Yes	-0.756	273	87
43	FO11a	No	2.068	639	38
44	FR41	No	-0.440	314	84
45	FR42	No	0.622	452	68
46	FR43	No	-0.204	344	82
47	FR44	No	0.881	485	59
48	FR45	No	0.616	451	69
49	FT31	Yes	-0.321	329	82
50	FT32	Yes	0.120	386	75
51	FT33	No	1.093	513	60
52	GC0231	No	0.949	494	61
53	GC33	Yes	-0.258	337	81
54	GC34	Yes	-0.024	368	79

Year 10					
	Item	Link	RP62	Scaled	Correct
55	GS31	Yes	0.721	465	68
56	GS32	Yes	-1.210	214	92
57	GS33	Yes	-0.097	358	80
58	HS21	Yes	1.258	534	54
59	ID42	No	1.312	541	55
60	ID43	No	1.118	516	59
61	IF11	Yes	2.528	699	29
62	IF12	Yes	1.635	583	48
63	IF13	Yes	2.363	678	27
64	IF14	Yes	2.073	640	38
65	IF15	Yes	2.270	666	34
66	IJ21	Yes	0.141	389	76
67	IM41	No	0.176	394	75
68	IQ11	Yes	1.855	612	43
69	IQ12	Yes	1.044	506	58
70	IQ13	Yes	2.198	656	36
71	IR21	Yes	0.245	403	74
72	JB41	No	-0.412	317	83
73	JB42	No	0.885	486	61
74	LC41	No	-0.504	305	85
75	LC42	No	0.844	481	65
76	LC43	No	0.096	383	77
77	LC44	No	0.816	477	64
78	MA0231	No	-0.004	370	78
79	MA0232	No	0.246	403	75
80	MA0233	No	-0.634	289	86
81	MA0234	No	-0.938	249	89
82	MA0235	No	0.172	393	76
83	MA41	No	0.570	445	68
84	MA42	No	0.238	402	74
85	MG31	Yes	-0.075	361	80
86	MP31	Yes	0.261	405	75
87	MP32	Yes	0.245	403	74
88	MP34	Yes	-0.031	367	80
89	MP35	Yes	1.036	505	59
90	PM41	No	-0.174	348	81
91	PROT31a	No	-0.704	280	87
92	PROT32	No	-0.942	249	89
93	PROT33	No	0.979	498	62
94	PT21	Yes	-0.825	264	88
95	PT22	Yes	1.585	577	47
96	PT23	Yes	0.816	477	63

Year 10					
	Item	Link	RP62	Scaled	Correct
97	PT24	Yes	1.434	557	51
98	RA41	No	-0.693	281	87
99	RA42	No	-0.586	295	86
100	RA43	No	-0.429	315	84
101	REF1_1	No	1.177	524	56
102	RP31	Yes	0.850	481	64
103	RQ21	Yes	3.077	770	19
104	RR23	Yes	0.222	400	74
105	SH41	No	1.724	595	44
106	SP31	Yes	1.313	541	54
107	SP32	Yes	-1.438	184	93
108	TD41	No	-0.625	290	86
109	TD42	No	-0.390	320	84
110	TS41	No	0.024	374	78
111	TS42	No	-0.365	324	82
112	TS43	No	-0.699	280	86
113	TU41	No	2.057	638	39
114	VO41	No	-1.026	238	90
115	VO42	No	0.442	428	71
116	WC42	No	-0.377	322	83
117	WC43	No	0.655	456	67
118	WH31	Yes	0.209	398	74
119	WH32	Yes	0.559	444	67
120	WH33	Yes	-1.242	210	91
121	WH34	Yes	-0.907	253	89
122	WH35	Yes	-1.549	170	93



## Appendix C.2: Student background variables used for conditioning

Variable	Name	Values	Coding	Regressor	Year 10 only
Adjusted school mean achievement	SCH_MN	Logits		Direct	
Sector	Sector	Public	00	Direct	
		Catholic	10	Direct	
		Independent	01	Direct	
Geographic Location	Geoloc	Metro 1.1	0000000	Direct	
		Metro 1.2	1000000	Direct	
		Provincial 2.1.1	0100000	Direct	
		Provincial 2.1.2	0010000	Direct	
		Provincial 2.2.1	0001000	Direct	
		Provincial 2.2.2	0000100	Direct	
		Remote 3.1	0000010	Direct	
		Remote 3.2	0000001	Direct	
SEIFA Levels	SEIFA	SEIFA_1	10000	Direct	
		SEIFA_2	01000	Direct	
		SEIFA_3	00100	Direct	
		SEIFA_4	00010	Direct	
		SEIFA_5	00000	Direct	
		Missing	00001	Direct	
Gender	GENDER	Male	10	Direct	
		Female	00	Direct	
Age	AGE	Value	Copy,0	PCA	
		Missing	Mean,1	PCA	
LOTE spoken at home	LBOTE	Yes	10	PCA	
		No	00	PCA	
		Missing	01	PCA	
Student Born in Australia	COB	Australia	00	PCA	

Variable	Name	Values	Coding	Regressor	Year 10 only
		Overseas	10	PCA	
		Missing	01	PCA	
Parental Occupation Group	POCC	Senior Managers and Professionals	10000	PCA	
		Other Managers and Associate Professionals	01000	PCA	
		Tradespeople & skilled office, sales and service staff	00100	PCA	
		Unskilled labourers, office, sales and service staff	00010	PCA	
		Not in paid work in last 12 months	00001	PCA	
		Not stated or unknown	00000	PCA	
Highest Level of Parental Education	PARED	'Not stated or unknown'	1000000	PCA	
		'Year 9 or equivalent or below'	0100000	PCA	
		'Year 10 or equivalent'	0010000	PCA	
		'Year 11 or equivalent'	0001000	PCA	
		'Year 12 or equivalent'	0000100	PCA	
		'Certificate 1 to 4 (inc trade cert)'	0000010	PCA	
		'Advanced Diploma/Diploma'	0000001	PCA	
		'Bachelor degree or above'	0000000	PCA	
Indigenous Status Indicator	INDIG	Indigenous	10	PCA	
		Non-Indigenous	00	PCA	
		Missing	01	PCA	
Civic part. at school - vote	P412a			PCA	
Civic part. at school - elected	P412b			PCA	
Civic part. at school - decisions	P412c			PCA	
Civic part. at school - paper	P412d	Yes	Three dummy variables per question with the national mode as reference category	PCA	
Civic part. at school - buddy	P412e	No		PCA	
Civic part. at school - community	P412f	This is not available at my school		PCA	
Civic part. at school - co-curricular	P412g	Missing		PCA	
Civic part. at school - candidate	P412h			PCA	
Civic part. at school - excursion	P412i			PCA	

Variable	Name	Values	Coding	Regressor	Year 10 only	
Civic part. in community - environmental	P411a			PCA	Year 10	
Civic part. in community - human rights	P411b	Yes, I have done this within the last year	Three dummy variables per question with the national mode as reference category	PCA	Year 10	
Civic part. in community - help community	P411c	Yes, I have done this but more than a year ago		PCA	Year 10	
Civic part. in community - collecting money	P411d	No, I have never done this		PCA	Year 10	
Civic part. in community - Scouts	P411e	Missing		PCA	Year 10	
Civic communication - newspaper	P413a				PCA	
Civic communication - television	P413b	Never or hardly ever	Four dummy variables per question with the national mode as reference category	PCA		
Civic communication - radio	P413c	At least once a month		PCA		
Civic communication - internet	P413d	At least once a week		PCA		
Civic communication - family	P413e	More than three times a week		PCA		
Civic communication - friends	P413f	Missing		PCA		
Civic communication - internet discussions	P413g			PCA		
PROMIS - write to newspaper	P421a				PCA	
PROMIS - wear an opinion	P421b			PCA		
PROMIS - contact an MP	P421c	I would certainly do this	Four dummy variables per question with the national mode as reference category	PCA		
PROMIS - rally or march	P421d	I would probably do this		PCA		
PROMIS - collect signature	P421e	I would probably not do this		PCA		
PROMIS - choose not to buy	P421f	I would certainly not do this		PCA		
PROMIS - sign petition	P421g	Missing		PCA		
PROMIS - write opinion on internet	P421h			PCA		
CIVACT -research candidates	P422a	I would certainly do this		Four dummy variables per question with the national mode as reference category	PCA	Year 10
CIVACT -help on campaign	P422b	I would probably do this			PCA	Year 10
CIVACT -join party	P422c	I would probably not do this	PCA		Year 10	
CIVACT -join union	P422d	I would certainly not do this	PCA		Year 10	
CIVACT -be a candidate	P422e	Missing	PCA		Year 10	
CIVINT - local community	P331a	Very interested	Four dummy variables per question with the	PCA		
CIVINT - politics	P331b	Quite interested		PCA		
CIVINT - social issues	P331c	Not very interested		PCA		

Variable	Name	Values	Coding	Regressor	Year 10 only
CIVINT - environmental	P331d	Not interested at all	national mode as reference category	PCA	
CIVINT - other countries	P331e	Missing		PCA	
CIVINT - global issues	P331f			PCA	
CIVCONF - discuss a conflict	P322a		Four dummy variables per question with the national mode as reference category	PCA	
CIVCONF - argue an opinion	P322b	Very well		PCA	
CIVCONF - be a candidate	P322c	Fairly well		PCA	
CIVCONF - organise a group	P322d	Not very well		PCA	
CIVCONF - write a letter	P322e	Not at all		PCA	
CIVCONF - give a speech	P322f	Missing		PCA	
VALCIV - act together	P321a	Strongly agree	Four dummy variables per question with the national mode as reference category	PCA	Year 10
VALCIV - elected reps	P321b	Agree		PCA	
VALCIV - student participation	P321c	Disagree		PCA	
VALCIV - organising groups	P321d	Strongly disagree		PCA	
VALCIV - citizens	P321e	Missing		PCA	
IMPCCON - support a party	P333a		Four dummy variables per question with the national mode as reference category	PCA	
IMPCCON - learn history	P333b			PCA	
IMPCCON - learn politics	P333c	Very important		PCA	
IMPCCON - learn about other countries	P333d	Quite important		PCA	
IMPCCON - discuss politics	P333e	Not very important		PCA	
IMPCSOC - peaceful protests	P333f	Not important at all		PCA	
IMPCSOC - local community	P333g	Missing		PCA	
IMPCSOC - human rights	P333h			PCA	
IMPCSOC - environmental	P333i			PCA	
CIVTRUST - Australian parliament	P334a	Completely	Four dummy variables per question with the national mode as reference category	PCA	
CIVTRUST - state parliament	P334b	Quite a lot		PCA	
CIVTRUST - law courts	P334c	A little		PCA	
CIVTRUST - police	P334d	Not at all		PCA	
CIVTRUST - political parties	P334e	Missing		PCA	

Variable	Name	Values	Coding	Regressor	Year 10 only
CIVTRUST - media	P334f			PCA	
ATINCULT - support traditions	P313a	Strongly agree	Four dummy variables per question with the national mode as reference category	PCA	
ATINCULT - improve quality of life	P313b	Agree		PCA	
ATINCULT - traditional ownership	P313c	Disagree		PCA	
ATINCULT - learn from traditions	P313d	Strongly disagree		PCA	
ATINCULT - learn about reconciliation	P313e	Missing		PCA	
ATAUSDIF - keep traditions	P312a			PCA	Year 10
ATAUSDIF – less employment	P312b			PCA	Year 10
ATAUSDIF - less peaceful	P312c	Strongly agree	Four dummy variables per question with the national mode as reference category	PCA	Year 10
ATAUSDIF - benefit greatly	P312d	Agree		PCA	Year 10
ATAUSDIF - all should learn	P312e	Disagree		PCA	Year 10
ATAUSDIF - unity difficult	P312f	Strongly disagree		PCA	Year 10
ATAUSDIF - better place if only similar background	P312g	Missing		PCA	Year 10

## Appendix D.1: Proficiency level descriptors

Level Scale Range	Revised proficiency level description	Selected item response descriptors
Level 5 ≥795	Students working at Level 5 demonstrate precise knowledge and understanding of the Australian democracy and the contexts in which it has developed. They evaluate civic actions and recognise the potential for ambiguity in contested civic and citizenship concepts.	Students working at Level 5, for example: <ul style="list-style-type: none"> <li>Analyse the reasons why the High Court decision may have been close and understands the federal /state division of powers.</li> <li>Explain the significance of Anzac Day and relates ANZAC day to Australian national pride and identity.</li> <li>Explain how needing a double majority for constitutional change supports stability over time.</li> <li>Analyse the tension between critical citizenship and abiding by the law.</li> <li>Recognise the exclusion of Indigenous Australians from the electoral process and understands the shift in the policy, towards inclusion.</li> </ul>
Level 4 665–794	Students working at Level 4 recognise the interaction between the policies and processes and actions of civil and civic institutions and the broader community. They explain the benefits, motivations, and outcomes of institutional policies and citizens' actions. They demonstrate familiarity with the precise discipline-specific vocabulary associated with civics and citizenship content and concepts both through interpreting text and in written responses.	Students working at Level 4, for example: <ul style="list-style-type: none"> <li>Provide a plausible explanation for a perception of the lack of representation of Indigenous Australian views in the Australian democracy.</li> <li>Explain how having citizens learn about other cultures can benefit the community through encouraging social harmony.</li> <li>Explain the symbolism of a national flag and understand that burning a flag is a mechanism for protesters to dissociate themselves from their government.</li> <li>Identify features of Australian democracy and understands the effect of certain factors on Australian governance.</li> <li>Analyse how voters prioritise issues differently at State and Federal elections.</li> <li>Link the impact of the media with some form of direct public action.</li> <li>Identify the benefits of a project which helps the homeless and disadvantaged.</li> </ul>
Level 3 535–664	Students working at Level 3 demonstrate knowledge of specific details of the Australian democracy. They make connections between the	Students working at Level 3, for example: <ul style="list-style-type: none"> <li>Identify a group that actively represents a sector within the community.</li> <li>Justify reasons for restrictions to free speech.</li> </ul>

Level Scale Range	Revised proficiency level description	Selected item response descriptors
	<p>processes of civil and outcomes of civil and civic institutions and demonstrate awareness of the common good as a potential motivation for civic action. Students working at Level 3 demonstrate awareness that civic processes can be explained and justified in relation to their broader purposes.</p>	<ul style="list-style-type: none"> <li>• Identify that sites of historic significance belong to the whole community.</li> <li>• Recognise some key functions and features of the parliament such as defining the role of the Speaker of the House of Representatives.</li> <li>• Refer to the notion of the common good as a motivation for signing a petition and identify that signing a petition shows support for a cause.</li> <li>• Explain how governments may change laws to ensure State and Federal consistency.</li> <li>• Justify the importance of elections in a democracy.</li> <li>• Identify that community representation taps local knowledge.</li> <li>• Identify the value of participatory decision making processes.</li> <li>• Identify the importance in democracies for citizens to engage with issues.</li> <li>• Identifies benefits of volunteering to the individual and the community.</li> <li>• recognises the key feature of the separation of powers in Australia.</li> </ul>
<p>Level 2 405–534</p>	<p>Students working at Level 2 demonstrate knowledge of core aspects of the Australian democracy. They demonstrate awareness of the connection between fundamental principles (such as fairness), and their manifestation in rules and laws. They demonstrate awareness of citizenship rights and responsibilities as being collective as well as individual and make simple evaluations of given mechanisms of civic action.</p>	<p>Students working at Level 2 for example:</p> <ul style="list-style-type: none"> <li>• Analyse an image of multiple identities.</li> <li>• Recognise the concept of Terra Nullius.</li> <li>• Suggest a disadvantage of consensus decision-making.</li> <li>• Identify the role of the Prime Minister.</li> <li>• Identify the origins of the Westminster system.</li> <li>• Give a reason explaining the contribution of aid to regional security.</li> <li>• Identify a correct statement about the federal system of government.</li> <li>• Identify a purpose for the existence of public records.</li> <li>• Recognise the definition of an independent Member of Parliament.</li> <li>• Recognise that a vote on a proposed change to the constitution is a referendum and understand the underlying principles of a referendum.</li> <li>• Identify a change in Australia’s national identity leading to changes in the national anthem.</li> <li>• Recognise that respecting the right of others to hold differing opinions is a democratic</li> </ul>

Level Scale Range	Revised proficiency level description	Selected item response descriptors
		<p>principle.</p> <ul style="list-style-type: none"> <li>• Recognise the division of governmental responsibilities in a federation.</li> <li>• Identify the role of the Governor-General.</li> <li>• Recognise changes in our national identity over time.</li> <li>• recognise why a fair society needs to be based on rules and laws.</li> <li>• Recognises the role of the voter in a representative democracy.</li> <li>• Identify the names of the two houses of the Australian Parliament.</li> <li>• identify one way that colonisation affected Indigenous Australian self-governance.</li> </ul>
<p>Level 1 275–404</p>	<p>Students working at Level 1 demonstrate knowledge of broad features of the Australian democracy. They recognise the cultural significance of the land to Indigenous Australians and that cultural attitudes and values can change over time. They demonstrate familiarity with simple mechanisms of community engagement and civic actions to inform and influence change.</p>	<p>Students working at Level 1, for example:</p> <ul style="list-style-type: none"> <li>• Identify a benefit of belonging to the United Nations.</li> <li>• Identify that the Federal Government is responsible for the defence forces.</li> <li>• Suggest a lawful civic action to influence local government decisions.</li> <li>• Suggest the motivation behind an act of ethical consumerism.</li> <li>• Identify that learning about other cultures can benefit a community.</li> <li>• Identify that Members of Parliament represent the people in their electorates.</li> <li>• Identify a benefit of holding a public meeting about an issue of community interest.</li> <li>• Recognise that attitudes to immigration in Australia have changed over time.</li> <li>• Describe ways of protesting in a democracy.</li> <li>• Recognise the purposes of a set of school rules and describes how a representative in a school body can effect change.</li> <li>• Identify and explain a principle that supports compulsory voting in Australia.</li> <li>• Identify the important role of the media in politics and the electoral process.</li> </ul>



Level Scale Range	Revised proficiency level description	Selected item response descriptors
		<ul style="list-style-type: none"> <li>• identify qualities that are necessary for civic responsibilities.</li> <li>• recognise that attitudes to immigration have changed over time.</li> <li>• recognises the principle of equity when it applied to employment opportunities.</li> </ul>
Below Level 1 <275	Students working at below Level 1 demonstrate knowledge of the notion of fairness and recognise some basic human rights. They demonstrate familiarity with basic aspects of democratic processes and legal systems and some familiarity with generalised characteristics of Australian identity.	<p>Students working at below Level 1 can, for example:</p> <ul style="list-style-type: none"> <li>• Recognise that Australians have diverse origins.</li> <li>• Identify a human right.</li> <li>• Recognise that taxes are a source of government revenue.</li> <li>• Recognise that members of parliament get their jobs by being voted for in elections.</li> <li>• Recognise the role of key personnel in the legal system.</li> <li>• Connect the separation of powers to the concept of fairness in a democracy.</li> <li>• Recognise that Australians have diverse origins.</li> <li>• Identify the importance of a gesture of cultural respect.</li> <li>• Identify the notion of good citizenship potential.</li> <li>• Recognise that Australia seeks to maintain close ties with other countries in the Asia-Pacific area.</li> <li>• Recognise that some schools encourage student participation in school decision-making.</li> <li>• Describe a fundamental democratic right related to age.</li> </ul>

### Appendix E.1: Percentiles of achievement on the Civics and Citizenship scale

		5 <sup>th</sup>	10 <sup>th</sup>	25 <sup>th</sup>	Mean - 95% CI	Mean	Mean + 95% CI	75 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	
Year 6	Australia	2004	229	270	334	393	400	407	470	525	558
		2007	220	266	339	400	405	410	479	534	565
		2010	207	254	330	401	408	415	489	559	602
		2013	190	239	322	397	403	409	490	555	594
	NSW	2004	241	286	350	402	418	433	491	546	576
		2007	259	306	373	421	432	443	499	553	581
		2010	228	277	348	413	426	439	506	576	619
		2013	191	244	333	404	418	432	510	583	621
	VIC	2004	257	294	357	406	417	427	482	531	561
		2007	247	292	356	408	418	429	489	536	564
		2010	234	273	347	408	422	436	497	567	610
		2013	225	271	346	410	421	432	500	559	593
	QLD	2004	212	250	310	357	371	384	437	487	516
		2007	194	239	306	363	376	390	453	512	546
		2010	172	221	300	358	374	391	456	520	561
		2013	179	223	304	371	384	397	467	531	569
	SA	2004	208	248	315	365	381	398	453	505	534
		2007	198	248	318	369	385	400	454	518	554
		2010	206	252	321	383	396	408	471	542	580
		2013	177	226	303	365	379	394	461	524	562
WA	2004	203	242	305	358	371	385	439	497	532	
	2007	181	229	305	358	369	380	445	498	529	
	2010	194	240	320	387	402	417	486	556	596	
	2013	183	222	303	367	383	399	468	534	569	
TAS	2004	210	256	327	378	393	408	466	519	551	
	2007	201	242	323	383	401	419	481	546	580	
	2010	197	249	331	396	411	425	495	570	613	
	2013	182	225	307	370	383	396	465	522	557	
NT	2004	187	227	299	354	371	388	448	506	534	
	2007	-131	-46	145	233	266	299	418	489	533	
	2010	62	122	217	285	316	347	431	497	531	
	2013	85	148	224	288	314	341	410	479	517	
ACT	2004	243	290	361	412	423	434	494	543	574	

		5 <sup>th</sup>	10 <sup>th</sup>	25 <sup>th</sup>	Mean - 95% CI	Mean	Mean + 95% CI	75 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>	
Year 10	2007	246	288	357	405	425	446	499	558	584	
	2010	252	297	364	425	442	458	522	585	625	
	2013	236	289	369	418	433	447	507	561	594	
	Australia	2004	289	345	428	489	496	503	575	631	664
	2007	295	345	429	493	502	510	585	646	681	
	2010	278	339	436	508	519	530	614	679	716	
	2013	305	354	434	505	511	518	593	660	699	
	NSW	2004	337	381	457	511	521	532	594	648	679
	2007	311	361	456	512	529	546	618	679	714	
	2010	319	380	479	534	558	582	652	711	744	
	2013	336	382	460	520	535	550	614	681	721	
	VIC	2004	284	338	424	475	494	513	577	634	665
	2007	288	337	424	477	494	511	577	634	665	
	2010	292	350	443	495	514	533	597	657	690	
	2013	318	368	443	507	521	535	599	666	709	
	QLD	2004	259	318	400	452	469	487	549	602	635
	2007	298	341	415	467	481	495	554	610	641	
	2010	225	287	390	454	482	511	586	652	685	
	2013	290	334	408	472	484	496	564	624	664	
	SA	2004	242	307	401	449	465	481	546	597	624
2007	304	358	443	481	505	528	581	639	673		
2010	284	328	412	469	487	506	571	640	679		
2013	274	326	408	470	486	503	571	638	673		
WA	2004	270	334	420	469	486	504	567	620	653	
2007	262	320	405	455	478	500	558	617	651		
2010	266	333	427	488	509	530	603	675	714		
2013	297	354	430	495	510	524	595	657	695		
TAS	2004	279	334	421	472	489	505	569	624	658	
2007	258	310	400	468	484	500	575	636	674		
2010	280	330	411	477	492	507	581	646	681		
2013	238	294	384	445	466	487	559	617	651		
NT	2004	285	345	420	457	490	524	570	635	668	
2007	165	288	408	426	464	502	553	619	649		
2010	204	285	394	451	483	516	598	642	720		
2013	156	200	341	394	418	442	515	581	619		
ACT	2004	305	370	452	497	518	540	595	654	687	

	5 <sup>th</sup>	10 <sup>th</sup>	25 <sup>th</sup>	Mean - 95% CI	Mean	Mean + 95% CI	75 <sup>th</sup>	90 <sup>th</sup>	95 <sup>th</sup>
<b>2007</b>	285	358	458	504	523	543	608	669	703
<b>2010</b>	298	358	444	499	523	547	613	673	702
<b>2013</b>	317	376	458	511	525	539	599	677	720